



DC/DC Converters

Standard Series



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Our SCHMID-M DC/DC Converters cover a range from 0.25W up to 30W. We always try to complete our product line according to the needs of our customers. Therefore we are proud to be able to introduce you our new SMD Series. Even if our standard series do not correspond to your special applications, please don't hesitate to contact us. With our customer designed series we will always be able to react to your individual needs.

Applications:

Portable Equipments, Industrial Control Circuits, Telecommunication Instruments, Bar Code Scanners, Notebooks and Palmtop PCs, Battery Chargers, Process Control Equipments, Local Area Network Circuits...

For more detailed information about all our series and power ranges, please have a look at our homepage www.schmid-m.com

DC/DC Converter - Overview

0.25W – 30W

Industry Standard Pin-Outs

Customer Design

Continuous Short Circuit Protection

Efficiency up to 92%

Up to 6000 Vdc Isolation

Operating Temperature -40°C ~ +85°C

Wide Input Range

Regulated/ Unregulated Output

Over 1800 Standard Models

SMD, SIL and DIL Package

RoHs Conform



Series	WATT	Single/Dual	Input Vdc	Output Vdc	Output Current (mA)	Features
VA	0.25	Single	5, 12, 24	5 – 24	50 – 11	4 Pin SIL // 8 Pin DIL Package, Unregulated, Efficiency up to 82%, 1k / 3k Vdc Isolation, Non-conductive Black Plastic Case, MTBF > 2 MHours
	0.50				100 – 21	
	1.00	Dual Separate	5, 12, 24	5 – 24, ±5 - ±24	100 – 25, ±100 - ±25	
		Single		5 – 24	200 – 50	
		Dual		±5 – ±24	±100 - ±25	
1.50	Single	5, 12, 24	5 – 24	300 – 62		
VB	1.00	Single	4.5 ~ 9, 9 ~ 18, 18 ~ 36	5 – 24	200 – 42	8 Pin SIL // 16 Pin DIL Package, Regulated, Efficiency up to 78%, 1k / 3k Vdc Isolation
	2.00				400 – 83	
VC	Customer designed series					
VD	1.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	5 – 24 / ±5 - ±24	300 – 63 / ±150 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Nickel-Coated Copper Metal, MTBF > 1.5 MHours, Continuous Short Circuit Protection, Wide 2:1 Input Range
	2.00				400 – 84 / ±200 - ±42	
	3.00				600 – 125 / ±300 - ±63	
	4.00				800 – 167 / ±400 - ±84	
	5.00				1000 – 209 / ±500 - ±105	
	6.00				1200 – 250 / ±600 - ±125	
VE	2.00	Single	5, 12, 24	5 – 24	400 – 83	4 Pin SIL Package, Unregulated, Efficiency up to 88%, 1k / 3k Vdc Isolation
VF	1.50	Single	5, 12, 24	5 – 24	300 – 63	12 Pin SIL Package, Regulated, Efficiency up to 72%, 1k / 3k Vdc Isolation, MTBF > 1.5 MHours
	2.00				400 – 83	
	3.00				600 – 125	
VG	1.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	5 – 24 / ±5 - ±24	300 – 63 / ±150 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Nickel-Coated Copper Metal, MTBF > 1.12 MHours, Continuous Short Circuit Protection, Wide 2:1 Input Range
	2.00				400 – 84 / ±200 - ±42	
	3.00				600 – 125 / ±300 - ±63	
	4.00				800 – 167 / ±400 - ±84	
	5.00				1000 – 209 / ±500 - ±105	
	6.00				1200 – 250 / ±600 - ±125	
VJ	1.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	3.3 – 24 / ±3.3 - ±24	400 – 63 / ±200 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Nickel-Coated Copper Metal, MTBF > 1.05 MHours, Continuous Short Circuit Protection, Wide 4:1 Input Range
	2.00		9 ~ 36, 18 ~ 72		600 – 84 / ±300 - ±42	
	3.00				900 – 125 / ±450 - ±63	
	4.00				1200 – 167 / ±600 - ±84	
	5.00				1000 – 209 / ±758 - ±104	
	6.00				1200 – 250 / ±900 - ±125	
VK	1.50	Single / Dual	9 ~ 36, 18 ~ 72	3.3 – 24 / ±3.3 - ±24	400 – 63 / ±200 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Nickel-Coated Copper Metal, MTBF > 1.05 MHours, Continuous Short Circuit Protection, Wide 4:1 Input Range
	2.00				600 – 84 / ±300 - ±42	
	3.00				900 – 125 / ±450 - ±63	
	4.00				1200 – 167 / ±600 - ±84	
	5.00				1000 – 209 / ±758 - ±104	
	6.00				1200 – 250 / ±900 - ±125	
VP	1.50	Single / Dual	9 ~ 36, 18 ~ 72	3.3 – 24 / ±3.3 - ±24	400 – 63 / ±200 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 78%, 1k / 3k Vdc Isolation, Wide 4:1 Input Range, MTBF > 1.03 MHours
	2.00				600 – 84 / ±300 - ±42	
	3.00				900 – 125 / ±450 - ±63	
VQ	4.00	Single / Dual	9 ~ 36, 18 ~ 72	3.3 – 24 / ±3.3 - ±24	1200 – 167 / ±600 - ±84	24 Pin DIL Package, Regulated, Efficiency up to 85%, 1k / 3k Vdc Isolation, Wide 4:1 Input Range, MTBF > 0.96 MHours
	5.00				1000 – 209 / ±758 - ±104	
	6.00				1200 – 250 / ±900 - ±125	
VS	1.00	Dual	5, 12	±3.3 - ±15	±150 - ±34	6 Pin SIL Package, Unregulated, Efficiency up to 80%, 3k Vdc Isolation



Series	WATT	Single/Dual	Input Vdc	Output Vdc	Output Current (mA)	Features
V1	0.50	Single / Dual	5, 12, 24	5 – 24 / ±5 - ±24	100 – 21 / ±50 - ±11	7 Pin SIL // 14 Pin DIL Package, Unregulated, Low Ripple and Noise, Efficiency up to 82%, 1k / 3k / 6k Vdc, Non-conductive Black Plastic Case, MTBF > 2 MHours
	0.75				150 – 32 / ±75 - ±16	
	1.00				200 – 42 / ±100 - ±21	
	1.00	Dual Separate		100, 151 – 100, 33		
	2.00			100, 100 – 34, 34		
V2	1.00	Dual Split	5, 12, 15, 24	5, 5	100, 100	7 Pin SIL Package, Regulated, Efficiency up to 69%, 1k / 3k Vdc Isolation
V3	1.00	Dual Separate	5, 12, 24	5, 3.3 – 5, 15	200, 200 – 200, 67	7 Pin SIL // 14 Pin DIL Package, Unregulated, Efficiency up to 86%, 1k / 3k / 6k Vdc, Low Ripple and Noise, MTBF > 2 MHours
	2.00			5, 5 – 15, 15	200, 200 – 67, 67	
	2.00	Single / Dual		5 – 24 / ±5 - ±24	400 – 83 / ±200 - ±42	
V4	1.00	Single	5, 12, 24	5 – 15	200 – 67	7 Pin SIL // 14 DIL Package, Regulated, Efficiency up to 70%, 1k / 3k Vdc Isolation
V5	1.50	Single / Dual	5, 12, 24	5 – 24 / ±5 - ±15	300 – 63 / ±150 - ±50	24 Pin DIL Package, Regulated, Efficiency up to 72%, 1k / 3k Vdc Isolation, MTBF > 1.3 MHours
	2.00				400 – 83 / ±200 - ±67	
	3.00				600 – 125 / ±300 - ±100	
V6	1.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	5 – 24 / ±5 - ±24	300 – 63 / ±150 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Nickel-Coated Copper Metal, Continuous Short Circuit Protection, Wide 2:1 Input Range, MTBF > 1.1 MHours
	2.00				400 – 84 / ±200 - ±42	
	3.00				600 – 125 / ±300 - ±63	
	4.00				800 – 167 / ±400 - ±84	
	5.00				1000 – 209 / ±500 - ±105	
	6.00				1200 – 250 / ±600 - ±125	
V7	7.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	5 – 24 / ±5 - ±24	1500 – 312 / ±750 - ±156	2" X 1" X 0.4" Package, Regulated, Efficiency up to 90%, 1.5k Vdc Isolation, Nickel-Coated Copper Metal, Continuous Short Circuit Protection, Wide 2:1 Input Range
	10.00				2000 – 416 / ±1000 - ±208	
	12.00				2400 – 500 / ±1200 - ±250	
	15.00				3000 – 625 / ±1500 - ±312	
	20.00				4000 – 833 / ±2000 - ±416	
	25.00				5000 – 1041 / ±2500 - ±520	
	30.00				6000 – 1250 / ±3000 - ±625	
RD	1.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	5 – 24 / ±5 - ±24	300 – 63 / ±150 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Non-Conductive Plastic Case, Continuous Short Circuit Protection, Wide 2:1 Input Range
	2.00				400 – 84 / ±200 - ±42	
	3.00				600 – 125 / ±300 - ±63	
	4.00				800 – 167 / ±400 - ±84	
	5.00				1000 – 209 / ±500 - ±105	
	6.00				1200 – 250 / ±600 - ±125	
RG	1.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	5 – 24 / ±5 - ±24	300 – 63 / ±150 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Non-Conductive Plastic Case, Continuous Short Circuit Protection, Wide 2:1 Input Range
	2.00				400 – 84 / ±200 - ±42	
	3.00				600 – 125 / ±300 - ±63	
	4.00				800 – 167 / ±400 - ±84	
	5.00				1000 – 209 / ±500 - ±105	
	6.00				1200 – 250 / ±600 - ±125	
RJ	1.50	Single / Dual	9 ~ 36, 18 ~ 72	3.3 – 24 / ±3.3 - ±24	400 – 63 / ±200 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 82%, 1.5k / 3.5kVdc Isolation, Non-Conductive Plastic Case, Continuous Short Circuit Protection, Wide 4:1 Input Range
	2.00				600 – 84 / ±300 - ±42	
	3.00				900 – 125 / ±450 - ±63	
	4.00				1200 – 167 / ±600 - ±84	
	5.00				1000 – 209 / ±500 - ±104	
	6.00				1200 – 250 / ±600 - ±125	
RK	1.50	Single / Dual	9 ~ 36, 18 ~ 72	3.3 – 24 / ±3.3 - ±24	400 – 63 / ±200 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 82%, 1.5k / 3.5kVdc Isolation, Non-Conductive Plastic Case, Continuous Short Circuit Protection, Wide 4:1 Input Range
	2.00				600 – 84 / ±300 - ±42	
	3.00				900 – 125 / ±450 - ±63	
	4.00				1200 – 167 / ±600 - ±84	
	5.00				1000 – 209 / ±500 - ±104	
	6.00				1200 – 250 / ±600 - ±125	
RP	1.50	Single / Dual	9 ~ 36, 18 ~ 72	3.3 – 24 / ±3.3 - ±24	400 – 63 / ±200 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Non-Conductive Plastic Case, Continuous Short Circuit Protection, Wide 4:1 Input Range
	2.00				600 – 84 / ±300 - ±42	
	3.00				900 – 125 / ±450 - ±63	
	4.00				1200 – 167 / ±600 - ±84	
	5.00				1000 – 209 / ±500 - ±104	
	6.00				1200 – 250 / ±600 - ±125	
R6	1.50	Single / Dual	9 ~ 18, 18 ~ 36, 36 ~ 72	5 – 24 / ±5 - ±24	300 – 63 / ±150 - ±32	24 Pin DIL Package, Regulated, Efficiency up to 83%, 1.5k / 3.5kVdc Isolation, Non-Conductive Plastic Case, Continuous Short Circuit Protection, Wide 2:1 Input Range
	2.00				400 – 84 / ±200 - ±42	
	3.00				600 – 125 / ±300 - ±63	
	4.00				800 – 167 / ±400 - ±84	
	5.00				1000 – 209 / ±500 - ±105	
	6.00				1200 – 250 / ±600 - ±125	
SAT	0.25	Dual	5, 12	±5 - ±15	±25 - ±8.3	10 Pin SMD Package High Efficiency up to 79% 1kVdc Isolation 3.3 V Input/Output also available
	0.50				±50 - ±16.6	
	1.00				±100 - ±33	
	2.00				±200 - ±66	
SBT	0.25	Single	5, 12	5 – 15	50 – 16	8 Pin SMD Package High Efficiency up to 78% 1kVdc Isolation 3.3 V Input/Output also available
	0.50				100 – 33	
	1.00				200 – 67	
	2.00				400 – 133	
SET	0.25	Dual	5, 12	±5 - ±15	±25 - ±8.3	12 Pin SMD Package High Efficiency up to 81% 3kVdc Isolation 3.3 V Input/Output also available
	0.50				±50 - ±16.6	
	1.00				±100 - ±33	
	2.00				±200 - ±66	
SFT	0.25	Single	5, 12	5 – 15	50 – 16	12 Pin SMD Package High Efficiency up to 81% 3kVdc Isolation 3.3 V Input/Output also available
	0.50				100 – 33	
	1.00				200 – 67	
	2.00				400 – 133	



DC/DC Converter – VA-S1/D1(H)

1 WATT

Single Output

FEATURES

- 1000 Vdc Isolation
- Up to 3000 Vdc Isolation
- 4 Pin SIL // 8 Pin DIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic Case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VA-0505S1/D1	5	5	200	80
VA-0509S1/D1		9	111	78
VA-0512S1/D1		12	100	78
VA-0515S1/D1		15	67	80
VA-0524S1/D1	12	24	50	82
VA-1205S1/D1		5	200	78
VA-1209S1/D1		9	111	78
VA-1212S1/D1		12	100	80
VA-1215S1/D1	24	15	67	80
VA-1224S1/D1		24	50	80
VA-2405S1/D1		5	200	78
VA-2409S1/D1		9	111	78
VA-2412S1/D1	5	12	100	80
VA-2415S1/D1		15	67	82
VA-2424S1/D1		24	50	82
VA-0505S1/D1H	5	5	200	80
VA-0509S1/D1H		9	111	78
VA-0512S1/D1H		12	100	78
VA-0515S1/D1H		15	67	80
VA-0524S1/D1H	12	24	50	82
VA-1205S1/D1H		5	200	78
VA-1209S1/D1H		9	111	78
VA-1212S1/D1H		12	100	80
VA-1215S1/D1H	24	15	67	80
VA-1224S1/D1H		24	50	80
VA-2405S1/D1H		5	200	78
VA-2409S1/D1H		9	111	78
VA-2412S1/D1H	5	12	100	80
VA-2415S1/D1H		15	67	82
VA-2424S1/D1H		24	50	82

1. Suffix "H" means 3000 Vdc Isolation.

2. Input Voltage range is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range $\pm 10\%$
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Up to 3000 Vdc.
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
Ripple and Noise (at 20 MHz BW) 100mVp-p, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 1.2\%$ / $\pm 1.0\%$ of Vin
Load Voltage Regulation $\pm 8\%$, load=20~100%
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 78% ~ 82%
Switching Frequency 80 KHz, Typ.

Environmental Specification:

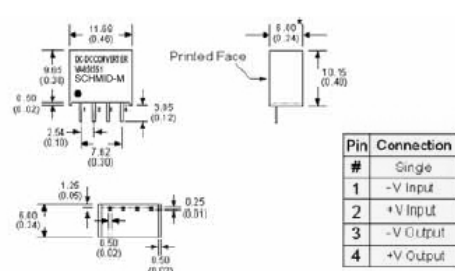
Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
Case Temperature 90°C Max.
Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

Capacitive Load: Single Output 220 μF , Max.

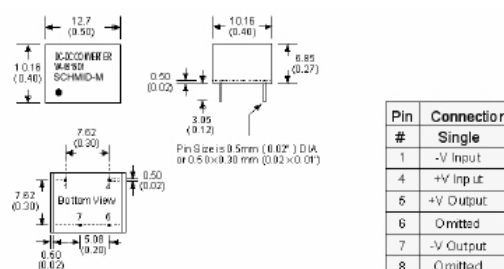
Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = 4.7 μF /100V ~ 47 μF /100V.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

4 Pin SIL package



8 Pin DIL package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. * 7.50 (0.29) for SIP 48 Vdc variants.

DC/DC Converter – VD-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.5 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VD-1205S1	9-18	5	300	74
VD-1209S1		9	167	77
VD-1212S1		12	125	76
VD-1215S1		15	100	78
VD-1224S1		24	63	78
VD-1205D1	9-18	±5	±150	74
VD-1209D1		±9	±84	76
VD-1212D1		±12	±63	75
VD-1215D1		±15	±50	78
VD-1224D1		±24	±32	78
VD-2405S1	18-36	5	300	74
VD-2409S1		9	167	74
VD-2412S1		12	125	76
VD-2415S1		15	100	76
VD-2424S1		24	63	77
VD-2405D1	18-36	±5	±150	75
VD-2409D1		±9	±84	76
VD-2412D1		±12	±63	77
VD-2415D1		±15	±50	78
VD-2424D1		±24	±32	78
VD-4805S1	36-72	5	300	73
VD-4809S1		9	167	75
VD-4812S1		12	125	77
VD-4815S1		15	100	77
VD-4824S1		24	63	78
VD-4805D1	36-72	±5	±150	74
VD-4809D1		±9	±84	75
VD-4812D1		±12	±63	77
VD-4815D1		±15	±50	78
VD-4824D1		±24	±32	78

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

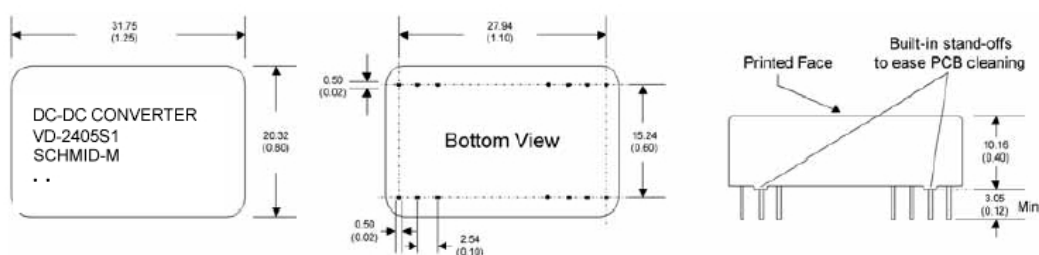
Efficiency 73% ~ 78%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.



DC/DC Converter – VD-S/D3

3 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.5 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VD-1205S3	9-18	5	600	76
VD-1209S3		9	334	77
VD-1212S3		12	250	79
VD-1215S3		15	200	79
VD-1224S3		24	125	79
VD-1205D3	9-18	±5	±300	77
VD-1209D3		±9	±167	78
VD-1212D3		±12	±125	78
VD-1215D3		±15	±100	78
VD-1224D3		±24	±63	78
VD-2405S3	18-36	5	600	80
VD-2409S3		9	334	80
VD-2412S3		12	250	82
VD-2415S3		15	200	82
VD-2424S3		24	125	80
VD-2405D3	18-36	±5	±300	78
VD-2409D3		±9	±167	79
VD-2412D3		±12	±125	80
VD-2415D3		±15	±100	80
VD-2424D3		±24	±63	80
VD-4805S3	36-72	5	600	77
VD-4809S3		9	334	78
VD-4812S3		12	250	80
VD-4815S3		15	200	80
VD-4824S3		24	125	80
VD-4805D3	36-72	±5	±300	78
VD-4809D3		±9	±167	79
VD-4812D3		±12	±125	80
VD-4815D3		±15	±100	80
VD-4824D3		±24	±63	80

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

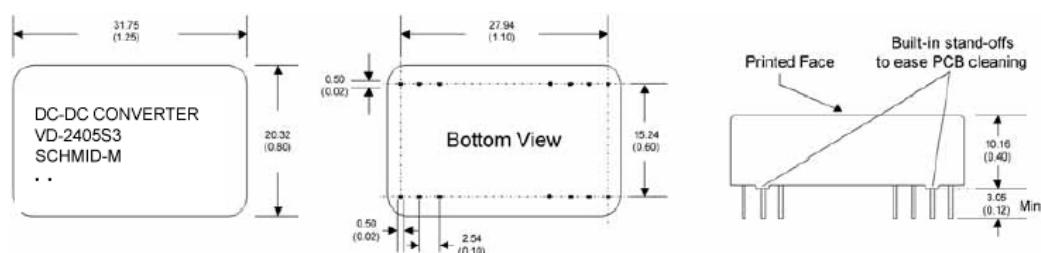
Efficiency 76% ~ 82%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin	STANDARD	
	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
11	N.C	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VD-S/D6

6 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.5 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VD-1205S6	9-18	5	1200	77
VD-1209S6		9	667	75
VD-1212S6		12	500	80
VD-1215S6		15	400	80
VD-1224S6		24	250	80
VD-1205D6	9-18	±5	±600	77
VD-1209D6		±9	±334	75
VD-1212D6		±12	±250	80
VD-1215D6		±15	±200	80
VD-1224D6		±24	±125	80
VD-2405S6	18-36	5	1200	80
VD-2409S6		9	667	83
VD-2412S6		12	500	83
VD-2415S6		15	400	83
VD-2424S6		24	250	83
VD-2405D6	18-36	±5	±600	80
VD-2409D6		±9	±334	83
VD-2412D6		±12	±250	83
VD-2415D6		±15	±200	83
VD-2424D6		±24	±125	83
VD-4805S6	36-72	5	1200	80
VD-4809S6		9	667	83
VD-4812S6		12	500	83
VD-4815S6		15	400	83
VD-4824S6		24	250	83
VD-4805D6	36-72	±5	±600	80
VD-4809D6		±9	±334	83
VD-4812D6		±12	±250	83
VD-4815D6		±15	±200	82
VD-4824D6		±24	±125	82

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm)$ 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

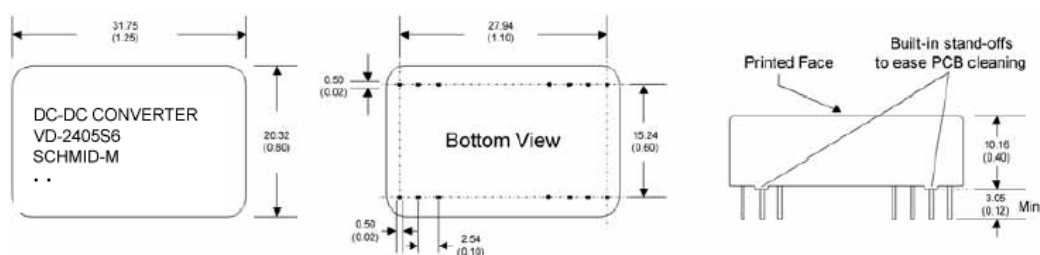
Efficiency 75% ~ 83%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +71^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
11	N.C	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VE-S(H)

2 WATT

Single Output

FEATURES

- 1000 Vdc Isolation
- Up to 3000 Vdc Isolation
- 4 Pin SIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic Case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VE-0505S	5	5	400	77
VE-0509S		9	222	82
VE-0512S		12	167	84
VE-0515S		15	133	84
VE-0524S	12	24	83	84
VE-1205S		5	400	80
VE-1209S		9	222	85
VE-1212S		12	167	85
VE-1215S	24	15	133	85
VE-1224S		24	83	83
VE-2405S		5	400	80
VE-2409S		9	222	86
VE-2412S	5	12	167	86
VE-2415S		15	133	86
VE-2424S		24	83	88
VE-0505SH	5	5	400	77
VE-0509SH		9	222	82
VE-0512SH		12	167	84
VE-0515SH		15	133	84
VE-0524SH	12	24	83	84
VE-1205SH		5	400	80
VE-1209SH		9	222	85
VE-1212SH		12	167	85
VE-1215SH	24	15	133	85
VE-1224SH		24	83	83
VE-2405SH		5	400	80
VE-2409SH		9	222	86
VE-2412SH	5	12	167	86
VE-2415SH		15	133	86
VE-2424SH		24	83	88

1. Suffix "H" means 3000 Vdc Isolation.
 2. Input Voltage range is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range $\pm 10\%$
 Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
 3000 Vdc, Suffix "H"
 Resistance 1000M Ω Min.
 Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
 Ripple and Noise (at 20 MHz BW) 120mVp-p, Max
 Short Circuit Protection Momentary
 Line Voltage Regulation $\pm 1.2\%$ / 1.0% of Vin
 Load Voltage Regulation $\pm 8\%$, load=20~100%
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 77% ~ 88%
 Switching Frequency 125 KHz, Typ.

Environmental Specification:

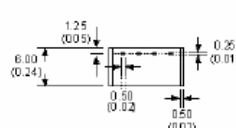
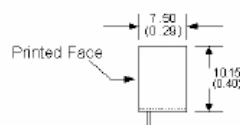
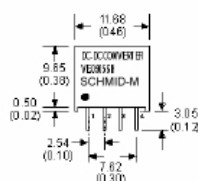
Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
 Case Temperature 95°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

Capacitive Load (Vout): 470 μF , Max.

Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = 4.7 μF /100V ~ 47 μF /100V.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

4 SIL package



Pin #	STANDARD
1	-V Input
2	+V Input
3	-V Output
4	+V Output

Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)

DC/DC Converter – VF-S1(H)

1.5 WATT

Single Output

FEATURES

- 1000 Vdc Isolation
- Up to 3000 Vdc Isolation
- 12 Pin SIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-conductive Black Plastic Case
- MTBF > 1.5 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VF-0505S1	5	5	300	66
VF-0509S1		9	167	66
VF-0512S1		12	125	70
VF-0515S1		15	100	70
VF-0524S1	12	24	63	68
VF-1205S1		5	300	66
VF-1209S1		9	167	66
VF-1212S1		12	125	70
VF-1215S1		15	100	70
VF-1224S1	24	24	63	68
VF-2405S1		5	300	63
VF-2409S1		9	167	63
VF-2412S1		12	125	68
VF-2415S1		15	100	68
VF-2424S1	5	24	63	68
VF-0505S1H		5	300	66
VF-0509S1H		9	167	66
VF-0512S1H		12	125	70
VF-0515S1H		15	100	70
VF-0524S1H	12	24	63	68
VF-1205S1H		5	300	66
VF-1209S1H		9	167	66
VF-1212S1H		12	125	70
VF-1215S1H		15	100	70
VF-1224S1H	24	24	63	68
VF-2405S1H		5	300	63
VF-2409S1H		9	167	63
VF-2412S1H		12	125	68
VF-2415S1H		15	100	68
VF-2424S1H		24	63	68

1. Suffix "H" means 3000 Vdc Isolation.
 2. Input Voltage range is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range	±10%
Filter	π (Pi) Network

Isolation Specification:

Rated Voltage	1000 Vdc, Standard 3000 Vdc, Suffix "H"
Resistance	1000M Ω Min.
Capacitance	60 pF, Typ.

Output Specifications:

Voltage Accuracy:	±2%, Max.
Ripple and Noise (at 20 MHz BW)	75mVp-p, Max
Short Circuit Protection	Continuous
Short circuit Restart	Automatic
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±0.5%, Max.
Temperature Coefficient	±0.02% / °C

General Specifications:

Efficiency	65% ~ 70%
Switching Frequency	40 KHz, Typ.

Environmental Specification:

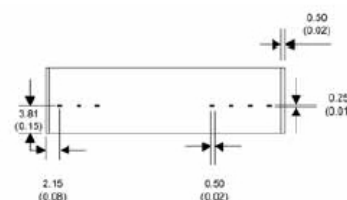
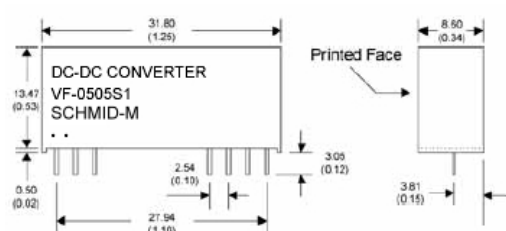
Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	90°C Max.
Storage Temperature	-40°C ~ +125°C
Derating	None Required
Humidity	Up to 90%, Non-condensing
Cooling	Free-air Convection

Capacitive Load: Single Output 470μF, Max.

Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = 4.7μF/100V ~ 47μF/100V.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

12 Pin SIL Package



Pin #	STANDARD	3KVdc
1	Single	Single
1	+V Input	+V Input
2	N.C	-V Input
3	N.C	N.C
9	N.C	N.C
10	-V Output	-V Output
11	+V Output	+V Output
12	-V Input	N.C

Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)

DC/DC Converter – VG-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.12 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VG-1205S1	9-18	5	300	74
VG-1209S1		9	167	77
VG-1212S1		12	125	76
VG-1215S1		15	100	78
VG-1224S1		24	63	78
VG-1205D1	9-18	±5	±150	74
VG-1209D1		±9	±84	76
VG-1212D1		±12	±63	75
VG-1215D1		±15	±50	78
VG-1224D1		±24	±32	78
VG-2405S1	18-36	5	300	74
VG-2409S1		9	167	74
VG-2412S1		12	125	76
VG-2415S1		15	100	76
VG-2424S1		24	63	77
VG-2405D1	18-36	±5	±150	75
VG-2409D1		±9	±84	76
VG-2412D1		±12	±63	77
VG-2415D1		±15	±50	78
VG-2424D1		±24	±32	78
VG-4805S1	36-72	5	300	73
VG-4809S1		9	167	75
VG-4812S1		12	125	77
VG-4815S1		15	100	77
VG-4824S1		24	63	78
VG-4805D1	36-72	±5	±150	74
VG-4809D1		±9	±84	75
VG-4812D1		±12	±63	77
VG-4815D1		±15	±50	78
VG-4824D1		±24	±32	78

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

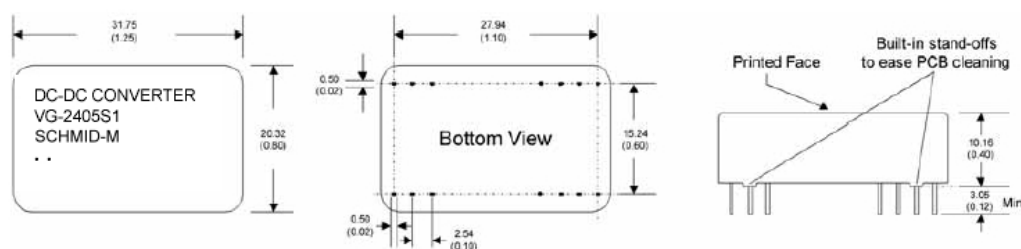
Efficiency 73% ~ 78%
Switching Frequency 60 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C	Common
11	N.C	Common
12	-V Output	N.C
13	+V Output	-V Output
15	N.C	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VJ-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.05MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VJ-243R3S1	9-36	3.3	400	72
VJ-2405S1		5	300	76
VJ-2409S1		9	167	76
VJ-2412S1		12	125	77
VJ-2415S1		15	100	77
VJ-2418S1		18	84	76
VJ-2424S1		24	63	76
VJ-243R3D1	9-36	±3.3	±200	72
VJ-2405D1		±5	±150	74
VJ-2409D1		±9	±84	77
VJ-2412D1		±12	±63	76
VJ-2415D1		±15	±50	78
VJ-2418D1		±18	±42	77
VJ-2424D1		±24	±32	76
VJ-483R3S1	18-72	3.3	400	72
VJ-4805S1		5	300	74
VJ-4809S1		9	167	75
VJ-4812S1		12	125	75
VJ-4815S1		15	100	75
VJ-4818S1		18	84	75
VJ-4824S1		24	63	76
VJ-483R3D1	18-72	±3.3	±200	73
VJ-4805D1		±5	±150	75
VJ-4809D1		±9	±84	75
VJ-4812D1		±12	±63	75
VJ-4815D1		±15	±50	76
VJ-4818D1		±18	±42	76
VJ-4824D1		±24	±32	76

1. Suffix " P " Plastic Instead of Metal case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 24Vdc, 09-36 Vdc
 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVJ-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

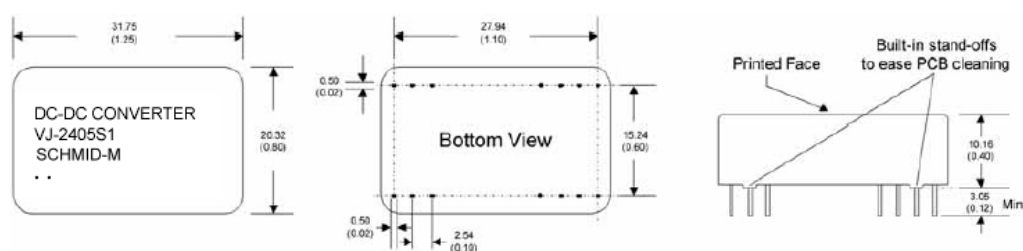
Efficiency 72% ~ 78%
 Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C	Common
11	N.C	Common
12	-V Output	N.C
13	+V Output	-V Output
15	N.C	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VJ-S/D3

3 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.05MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VJ-243R3S3	9-36	3.3	900	75
VJ-2405S3		5	600	78
VJ-2409S3		9	334	79
VJ-2412S3		12	250	81
VJ-2415S3		15	200	81
VJ-2418S3		18	167	81
VJ-2424S3		24	125	81
VJ-243R3D3	9-36	±3.3	±450	76
VJ-2405D3		±5	±300	79
VJ-2409D3		±9	±167	79
VJ-2412D3		±12	±125	80
VJ-2415D3		±15	±100	80
VJ-2418D3		±18	±84	81
VJ-2424D3		±24	±63	80
VJ-483R3S3	18-72	3.3	900	76
VJ-4805S3		5	600	80
VJ-4809S3		9	334	82
VJ-4812S3		12	250	80
VJ-4815S3		15	200	80
VJ-4818S3		18	167	80
VJ-4824S3		24	125	81
VJ-483R3D3	18-72	±3.3	±450	76
VJ-4805D3		±5	±300	81
VJ-4809D3		±9	±167	82
VJ-4812D3		±12	±125	81
VJ-4815D3		±15	±100	82
VJ-4818D3		±18	±84	81
VJ-4824D3		±24	±63	81
1. Suffix " P " Plastic Instead of Metal case Package.				
2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.				

Input Specifications:

Voltage Range 24Vdc, 09-36 Vdc
48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm) 60\text{mVJ-p}$, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\% / ^\circ\text{C}$

General Specifications:

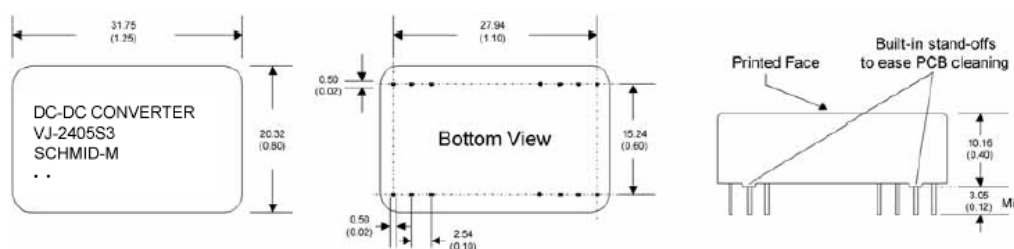
Efficiency 75% ~ 82%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^\circ\text{C} \sim +85^\circ\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^\circ\text{C} \sim +125^\circ\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C	Common
11	N.C	Common
12	-V Output	N.C
13	+V Output	-V Output
15	N.C	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VK-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.05MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VK-243R3S1	9-36	3.3	400	72
VK-2405S1		5	300	76
VK-2409S1		9	167	76
VK-2412S1		12	125	77
VK-2415S1		15	100	77
VK-2418S1		18	84	76
VK-2424S1		24	63	76
VK-243R3D1	9-36	±3.3	±200	72
VK-2405D1		±5	±150	75
VK-2409D1		±9	±84	77
VK-2412D1		±12	±63	76
VK-2415D1		±15	±50	78
VK-2418D1		±18	±42	77
VK-2424D1		±24	±32	76
VK-483R3S1	18-72	3.3	400	72
VK-4805S1		5	300	74
VK-4809S1		9	167	75
VK-4812S1		12	125	75
VK-4815S1		15	100	75
VK-4818S1		18	84	75
VK-4824S1		24	63	76
VK-483R3D1	18-72	±3.3	±200	73
VK-4805D1		±5	±150	75
VK-4809D1		±9	±84	75
VK-4812D1		±12	±63	75
VK-4815D1		±15	±50	76
VK-4818D1		±18	±42	76
VK-4824D1		±24	±32	76

1. Suffix " P " Plastic Instead of Metal case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 24Vdc, 09-36 Vdc
 48Vdc, 18-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

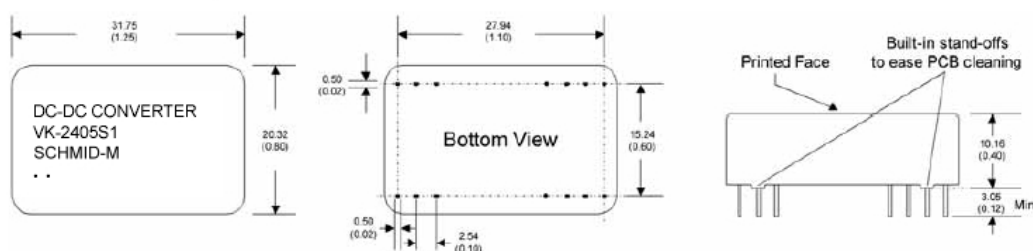
Efficiency 72% ~ 78%
 Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin	STANDARD	
#	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
11	N.C	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VK-S/D4

4 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.05MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VK-243R3S4	9-36	3.3	1200	77
VK-2405S4		5	800	80
VK-2409S4		9	445	80
VK-2412S4		12	333	83
VK-2415S4		15	267	83
VK-2418S4		18	223	80
VK-2424S4		24	167	81
VK-243R3D4	9-36	±3.3	±600	76
VK-2405D4		±5	±400	78
VK-2409D4		±9	±223	80
VK-2412D4		±12	±167	82
VK-2415D4		±15	±134	80
VK-2418D4		±18	±112	80
VK-2424D4		±24	±84	80
VK-483R3S4	18-72	3.3	1200	77
VK-4805S4		5	800	80
VK-4809S4		9	445	82
VK-4812S4		12	333	81
VK-4815S4		15	267	81
VK-4818S4		18	223	81
VK-4824S4		24	167	82
VK-483R3D4	18-72	±3.3	±600	75
VK-4805D4		±5	±400	79
VK-4809D4		±9	±223	81
VK-4812D4		±12	±167	82
VK-4815D4		±15	±134	81
VK-4818D4		±18	±112	80
VK-4824D4		±24	±84	80

1. Suffix " P " Plastic Instead of Metal case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range	24Vdc, 09-36 Vdc 48Vdc, 18-72 Vdc
Filter	π (Pi) Network

Isolation Specification:

Rated Voltage	1500 Vdc, Standard
Resistance	1000M Ω Min.
Capacitance	390 pF, Typ.

Output Specifications:

Voltage Accuracy:	±1%, Max.
Voltage Balance (Dual Outputs)	±1%
Ripple and Noise (at 20 MHz BW)	(±) 60mVp-p, Max
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±0.5%, Max.
Temperature Coefficient	±0.02% / °C

General Specifications:

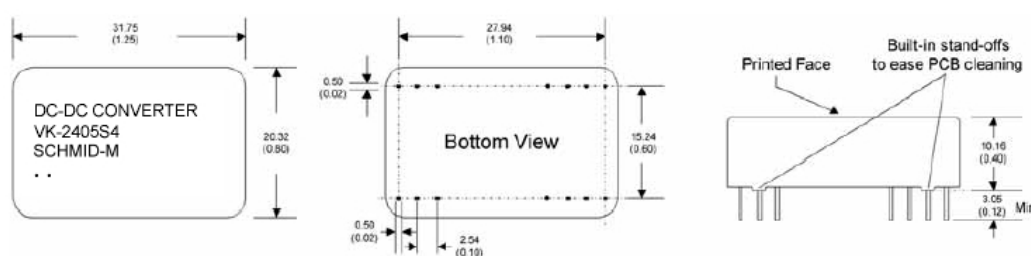
Efficiency	76% ~ 83%
Switching Frequency	260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	100°C Max.
Storage Temperature	-40°C ~ +125°C
Derating	None Required
Humidity	Up to 90%, Non-condensing
Cooling	Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD
2	-V Input
3	-V Input
9	Omitted
11	N.C
14	+V Output
16	-V Output
22	+V Input
23	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VP-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.03MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VP-243R3S1	9-36	3.3	400	72
VP-2405S1		5	300	76
VP-2409S1		9	167	76
VP-2412S1		12	125	77
VP-2415S1		15	100	77
VP-2418S1		18	84	76
VP-2424S1		24	63	76
VP-243R3D1	9-36	±3.3	±200	72
VP-2405D1		±5	±150	75
VP-2409D1		±9	±84	77
VP-2412D1		±12	±63	76
VP-2415D1		±15	±50	79
VP-2418D1		±18	±42	77
VP-2424D1		±24	±32	76
VP-483R3S1	18-72	3.3	400	72
VP-4805S1		5	300	74
VP-4809S1		9	167	75
VP-4812S1		12	125	75
VP-4815S1		15	100	75
VP-4818S1		18	84	75
VP-4824S1		24	63	76
VP-483R3D1	18-72	±3.3	±200	73
VP-4805D1		±5	±150	75
VP-4809D1		±9	±84	75
VP-4812D1		±12	±63	75
VP-4815D1		±15	±50	76
VP-4818D1		±18	±42	75
VP-4824D1		±24	±32	75

1. Suffix " P " Plastic Instead of Metal case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 24Vdc, 09-36 Vdc
 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

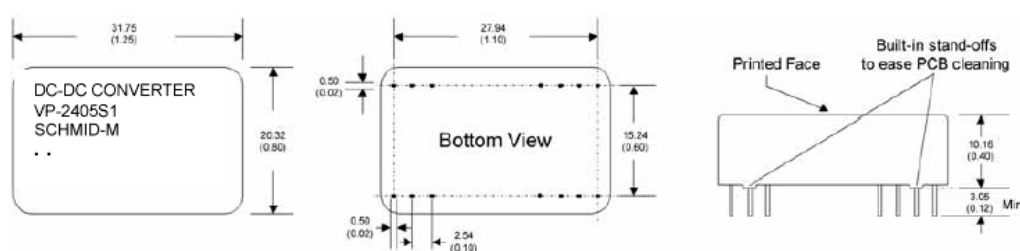
Efficiency 72% ~ 78%
 Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	Single	Dual
1	+V Input	+V Input	+V Input
2	N.C	N.C	-V Input
3	N.C	N.C	Common
9	Omitted	Omitted	Omitted
10	-V Output	-V Output	Common
11	+V Output	+V Output	+V Output
12	-V Input	-V Input	-V Input
13	-V Input	-V Input	-V Input
14	+V Output	+V Output	+V Output
15	-V Output	-V Output	Common
16	Omitted	Omitted	Omitted
22	N.C	N.C	Common
23	N.C	N.C	-V Output
24	+V Input	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VQ-S/D4

4 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 0.96MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VQ-243R3S4	9-36	3.3	1200	77
VQ-2405S4		5	800	80
VQ-2409S4		9	445	80
VQ-2412S4		12	333	83
VQ-2415S4		15	267	83
VQ-2418S4		18	223	80
VQ-2424S4		24	167	81
VQ-243R3D4	9-36	±3.3	±600	76
VQ-2405D4		±5	±400	78
VQ-2409D4		±9	±223	80
VQ-2412D4		±12	±167	82
VQ-2415D4		±15	±134	80
VQ-2418D4		±18	±112	80
VQ-2424D4		±24	±84	80
VQ-483R3S4	18-72	3.3	1200	77
VQ-4805S4		5	800	80
VQ-4809S4		9	445	82
VQ-4812S4		12	333	81
VQ-4815S4		15	267	81
VQ-4818S4		18	223	81
VQ-4824S4		24	167	82
VQ-483R3D4	18-72	±3.3	±600	75
VQ-4805D4		±5	±400	79
VQ-4809D4		±9	±223	81
VQ-4812D4		±12	±167	82
VQ-4815D4		±15	±134	81
VQ-4818D4		±18	±112	80
VQ-4824D4		±24	±84	80

1. Suffix " P " Plastic Instead of Metal case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 24Vdc, 09-36 Vdc
 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) $(\pm) 60\text{mVQ-p}$, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\% / ^\circ\text{C}$

General Specifications:

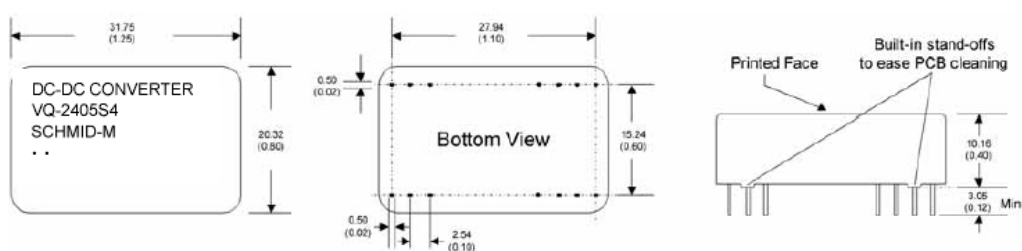
Efficiency 72% ~ 78%
 Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^\circ\text{C} \sim +85^\circ\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature $-40^\circ\text{C} \sim +125^\circ\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – VS-S

1 WATT

Dual Output

FEATURES

- 3000 Vdc Isolation
- 6 Pin SIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic Case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
VS-053R3S	5	±3.3	±150	68
VS-0505S		±5	±100	72
VS-057R2S		±7.2	±69	74
VS-0509S		±9	±56	74
VS-0512S		±12	±42	76
VS-0515S		±15	±34	78
VS-123R3S	12	±3.3	±150	68
VS-1205S		±5	±100	72
VS-127R2S		±7.2	±69	74
VS-1209S		±9	±56	78
VS-1212S		±12	±42	78
VS-1215S		±15	±34	80

1. Input Voltage is from 5 V to 12 V and Output Voltage is from 3.3 V to 15 V.

Input Specifications:

Voltage Range ±10%
Filter Capacitors

Isolation Specification:

Rated Voltage 3000 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 50 pF, Typ.

Output Specifications:

Voltage Accuracy: ±3%, Max.
Voltage Balance (Dual Outputs) ±1%
Ripple and Noise (at 20 MHz BW) ±75mVp-p, Max
Short Circuit Protection Momentary
Line Voltage Regulation ±1.2% / 1.0% of V_{in}
Load Voltage Regulation ±8%, load=20~100%
Temperature Coefficient ±0.02% / °C

General Specifications:

Efficiency 68% ~ 80%
Switching Frequency 150 KHz, Typ.

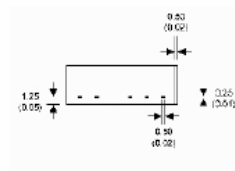
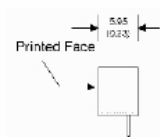
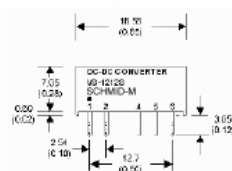
Environmental Specification:

Operating Temperature (Ambient) -40°C ~ +85°C
Case Temperature 90°C Max.
Storage Temperature -40°C ~ +125°C
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

Capacitive Load(V_{out}): ±100 μ F, Max.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

6 Pin SIL package



Pin #	3 KVdc
1	+V Input
2	-V Input
4	-V Output
5	Common
6	+V Output

Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)



DC/DC Converter – V1-SS/DS05 , V1-S/D05

0.5 WATT

Single / Dual Output

FEATURES

- 1000 Vdc Isolation (3000 Vdc and 6000 Vdc Isolation available)
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V1-0505SS/DS05	5	5	100	70
V1-0509SS/DS05		9	56	70
V1-0512SS/DS05		12	42	70
V1-0515SS/DS05		15	34	72
V1-0524SS/DS05		24	21	70
V1-0505S/D05	5	±5	±50	70
V1-0509S/D05		±9	±28	72
V1-0512S/D05		±12	±21	75
V1-0515S/D05		±15	±17	75
V1-0524S/D05		±24	±11	72
V1-1205SS/DS05	12	5	100	70
V1-1209SS/DS05		9	56	70
V1-1212SS/DS05		12	42	70
V1-1215SS/DS05		15	34	72
V1-1224SS/DS05		24	21	70
V1-1205S/D05	12	±5	±50	70
V1-1209S/D05		±9	±28	72
V1-1212S/D05		±12	±21	75
V1-1215S/D05		±15	±17	75
V1-1224S/D05		±24	±11	72
V1-2405SS/DS05	24	5	100	70
V1-2409SS/DS05		9	56	70
V1-2412SS/DS05		12	42	70
V1-2415SS/DS05		15	34	72
V1-2424SS/DS05		24	21	70
V1-2405S/D05	24	±5	±50	70
V1-2409S/D05		±9	±28	72
V1-2412S/D05		±12	±21	75
V1-2415S/D05		±15	±17	75
V1-2424S/D05		±24	±11	72

1. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 10%
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm) 75\text{mVp-p}$, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 1.2\%$ / 1.0% of V_{in}
Load Voltage Regulation $\pm 8\%$, Load=20~100%
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 72% ~ 82%
Switching Frequency 125 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 90°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

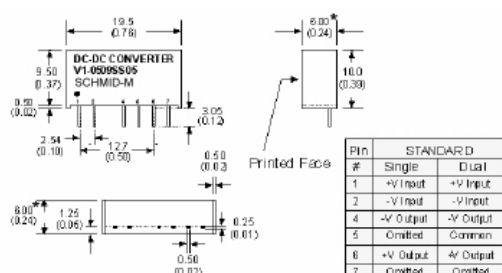
Capacitive Load:

Single Output 200 μF , Max.
Dual Output $\pm 100\mu\text{F}$, Max.

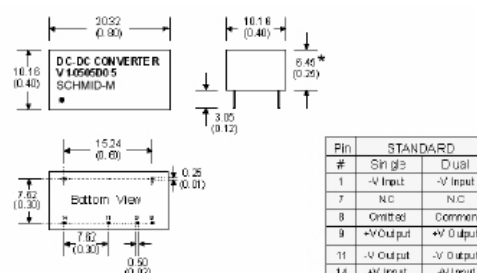
Note: For V_{in} 48V series, pls. add a capacitor in the input point. $C_x = 4.7\mu\text{F}/100\text{V} \sim 47\mu\text{F}/100\text{V}$.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 Pin SIL package



14 Pin DIL package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. "*" SIL Package: 7.20 (0.28) for 48 Vdc variants; DIL Package: 6.88 (0.27) for 48 Vdc variants.



DC/DC Converter – V1-SS/DS075 , V1-S/D075

0.75 WATT

Single / Dual Output

FEATURES

- 1000 Vdc Isolation (3000 Vdc and 6000 Vdc Isolation available)
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V1-0505SS/DS075	5	5	150	80
V1-0509SS/DS075		9	84	75
V1-0512SS/DS075		12	62	77
V1-0515SS/DS075		15	50	77
V1-0524SS/DS075	5	24	32	75
V1-0505S/D075		±5	±75	72
V1-0509S/D075		±9	±42	76
V1-0512S/D075		±12	±32	80
V1-0515S/D075	5	±15	±23	80
V1-0524S/D075		±24	±16	76
V1-1205SS/DS075	12	5	150	79
V1-1209SS/DS075		9	84	76
V1-1212SS/DS075		12	62	80
V1-1215SS/DS075		15	50	80
V1-1224SS/DS075	12	24	32	76
V1-1205S/D075		±5	±75	72
V1-1209S/D075		±9	±42	75
V1-1212S/D075		±12	±32	79
V1-1215S/D075	12	±15	±25	79
V1-1224S/D075		±24	±16	75
V1-2405SS/DS075	24	5	150	80
V1-2409SS/DS075		9	84	75
V1-2412SS/DS075		12	62	78
V1-2415SS/DS075		15	50	78
V1-2424SS/DS075	24	24	32	75
V1-2405S/D075		±5	±75	72
V1-2409S/D075		±9	±42	74
V1-2412S/D075		±12	±32	78
V1-2415S/D075	24	±15	±25	78
V1-2424S/D075		±24	±16	74

1. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 10%
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm) 75\text{mVp-p}$, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 1.2\% / 1.0\%$ of Vin
Load Voltage Regulation $\pm 8\%$, Load=20~100%
Temperature Coefficient $\pm 0.02\% / ^\circ\text{C}$

General Specifications:

Efficiency 72% ~ 82%
Switching Frequency 125 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^\circ\text{C} \sim +85^\circ\text{C}$
Case Temperature 90°C Max.
Storage Temperature $-40^\circ\text{C} \sim +125^\circ\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

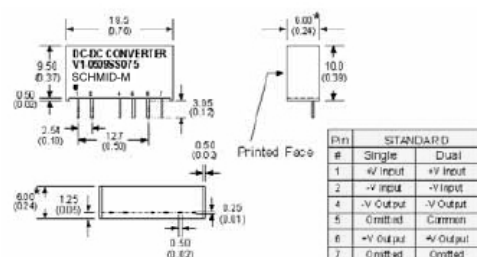
Capacitive Load:

Single Output 200uF, Max.
Dual Output $\pm 100\text{uF}$, Max.

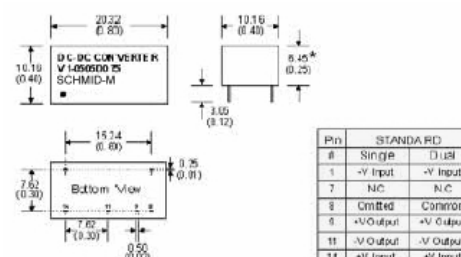
Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = $4.7\mu\text{F}/100\text{V} \sim 47\mu\text{F}/100\text{V}$.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 Pin SIL package



14 Pin DIL package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. "*" SIL Package: 7.20 (0.28) for 48 Vdc variants; DIL Package: 6.88 (0.27) for 48 Vdc variants.



DC/DC Converter – V1-DS/SS , V1-D/S

1 WATT

Single / Dual Output

FEATURES

- 1000 Vdc Isolation (3000 Vdc and 6000 Vdc Isolation available)
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V1-0505SS/DS	5	5	200	78
V1-0509SS/DS		9	111	80
V1-0512SS/DS		12	84	80
V1-0515SS/DS		15	67	80
V1-0524SS/DS		24	42	80
V1-0505S/D	5	±5	±100	72
V1-0509S/D		±9	±56	80
V1-0512S/D		±12	±42	80
V1-0515S/D		±15	±34	82
V1-0524S/D		±24	±21	80
V1-1205SS/DS	12	5	200	78
V1-1209SS/DS		9	111	80
V1-1212SS/DS		12	84	80
V1-1215SS/DS		15	67	82
V1-1224SS/DS		24	42	77
V1-1205S/D	12	±5	±100	72
V1-1209S/D		±9	±56	76
V1-1212S/D		±12	±42	78
V1-1215S/D		±15	±34	80
V1-1224S/D		±24	±21	77
V1-2405SS/DS	24	5	200	80
V1-2409SS/DS		9	111	78
V1-2412SS/DS		12	84	78
V1-2415SS/DS		15	67	82
V1-2424SS/DS		24	42	80
V1-2405S/D	24	±5	±100	72
V1-2409S/D		±9	±56	78
V1-2412S/D		±12	±42	78
V1-2415S/D		±15	±34	78
V1-2424S/D		±24	±21	80

1. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 10%
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm) 75\text{mVp-p}$, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 1.2\%$ / 1.0% of Vin
Load Voltage Regulation $\pm 8\%$, Load=20~100%
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 72% ~ 82%
Switching Frequency 125 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 90°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

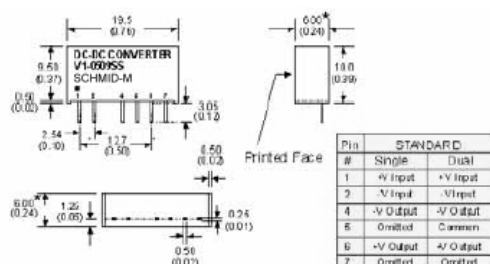
Capacitive Load:

Single Output 200uF, Max.
Dual Output $\pm 100\text{uF}$, Max.

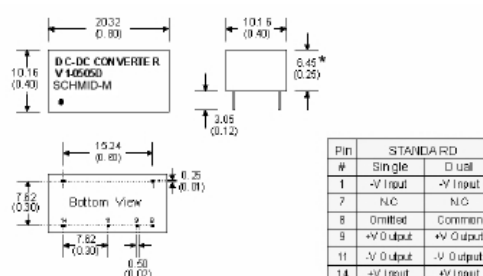
Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = $4.7\mu\text{F}/100\text{V} \sim 47\mu\text{F}/100\text{V}$.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 Pin SIL package



14 Pin DIL package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. "*" SIL Package: 7.20 (0.28) for 48 Vdc variants; DIL Package: 6.88 (0.27) for 48 Vdc variants.



DC/DC Converter – V1-S/D01 , V1-S/D02

1 WATT

Separate Dual Output

FEATURES

- 1000 Vdc Isolation
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic Case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V1-053R3S/D01	5	5,3,3	100,151	75
V1-057R2S/D01		5,7,2	100,69	75
V1-0509S/D01		5,9	100,56	77
V1-0512S/D01		5,12	100,42	77
V1-0515S/D01		5,15	100,33	82
V1-123R3S/D01	12	5,3,3	100,151	75
V1-127R2S/D01		5,7,2	100,69	75
V1-1209S/D01		5,9	100,56	77
V1-1212S/D01		5,12	100,42	80
V1-1215S/D01		5,15	100,34	77
V1-243R3S/D01	24	5,3,3	100,151	75
V1-247R2S/D01		5,7,2	100,69	75
V1-2409S/D01		5,9	100,56	77
V1-2412S/D01		5,12	100,42	77
V1-2415S/D01		5,15	100,34	80
V1-0505S/D02	5	5,5	100,100	72
V1-0509S/D02		9,9	56,56	75
V1-0512S/D02		12,12	42,42	80
V1-0515S/D02		15,15	34,34	78
V1-1205S/D02	12	5,5	100,100	72
V1-1209S/D02		9,9	56,56	75
V1-1212S/D02		12,12	42,42	78
V1-1215S/D02		15,15	34,34	80
V1-2405S/D02	24	5,5	100,100	72
V1-2409S/D02		9,9	56,56	78
V1-2412S/D02		12,12	42,42	80
V1-2415S/D02		15,15	34,34	77

1. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range $\pm 10\%$
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
Ripple and Noise (at 20 MHz BW) $\pm 75\text{mVp-p}$, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 1.2\%$ / 1.0% of V_{in}
Load Voltage Regulation $\pm 8\%$, load=20~100%
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 78% ~ 80%
Switching Frequency 125 KHz, Typ.

Environmental Specification:

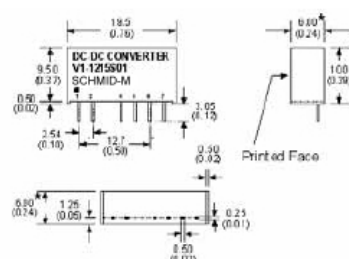
Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
Case Temperature 90°C Max.
Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

Capacitive Load: 100 μF , 100 μF , Max.

Note: For Vin 48V series, pls. add a capacitor in the input point. $C_x = 4.7\mu\text{F}/100\text{V} \sim 47\mu\text{F}/100\text{V}$.

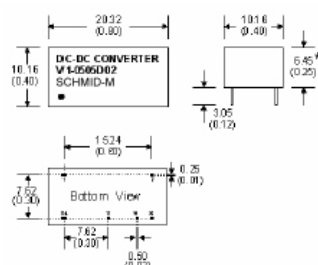
MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 Pin SIL package



Pin #	STANDARD
1	Dual Separate
2	+V Input
3	-V Input
4	+V1 Output
5	-V1 Output
6	+V2 Output
7	-V2 Output

14 Pin DIL package



Pin #	STANDARD
1	Dual Separate
2	-V Input
3	N.C.
4	-V2 Output
5	+V2 Output
6	-V1 Output
7	+V1 Output
8	-V Input

Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. "*" SIL Package: 7.20 (0.28) for 48 Vdc variants; DIL Package: 6.88 (0.27) for 48 Vdc variants.

DC/DC Converter – V2-S, V2-SH

1 WATT

Dual Split Output

FEATURES

- 1000 Vdc Isolation
- Up to 3000 Vdc Isolation
- 7 Pin SIL Package
- Low Ripple and Noise
- Regulated
- Non-conductive Black Plastic Case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V2-0505S	05	5,5	100,100	65
V2-1205S	12	5,5	100,100	67
V2-1505S	15	5,5	100,100	67
V2-2405S	24	5,5	100,100	69
V2-0505SH	05	5,5	100,100	65
V2-1205SH	12	5,5	100,100	67
V2-1505SH	15	5,5	100,100	67
V2-2405SH	24	5,5	100,100	69

1. Suffix "H" means 3 KV Isolation.

Input Specifications:

Voltage Range $\pm 10\%$
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
3000 Vdc, Suffix "H"
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 2\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) 50mVp-p, Max
Short Circuit Protection Short Term
Line Voltage Regulation $\pm 0.4\%$, Max.
Load Voltage Regulation $\pm 3\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 65% ~ 69%
Switching Frequency 100 KHz, Typ.

Environmental Specification:

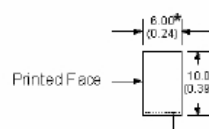
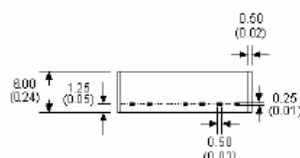
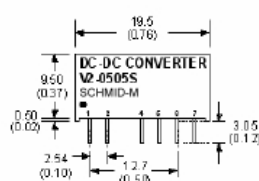
Operating Temperature (Ambient) $-25^{\circ}\text{C} \sim +71^{\circ}\text{C}$
Case Temperature 90°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

Capacitive Load(Vout): 470 μF , Max.

Note: For Vin 48V series, pls. add a capacitor in the input. Cx = 4.7 $\mu\text{F}/100\text{V} \sim 47 \mu\text{F}/100\text{V}$.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 SIL Package



P in	STANDARD	3 KV dc
#	Dual Split	Dual Split
1	+V Input	+V Input
2	-V Input	-V Input
4	+V2 Output	Omitted
5	Ground	+V2 Output
6	+V1 Output	Ground
7	Omitted	+V1 Output

Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)



DC/DC Converter – V3-S/D01, V3-S/D02

2 WATT

Separate Dual Output

FEATURES

- 1000 Vdc Isolation
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V3-0503R3S/D01	5	5,3,3	200,200	77
V3-057R2SS/D01		5,7,2	200,139	77
V3-0509S/D01		5,9	200,111	77
V3-0512S/D01		5,12	200,84	80
V3-0515S/D01		5,15	200,67	80
V3-123R3S/D01	12	5,3,3	200,200	77
V3-127R2S/D01		5,7,2	200,139	77
V3-1209S/D01		5,9	200,111	77
V3-1212S/D01		5,12	200,84	80
V3-1215S/D01		5,15	200,67	80
V3-243R3S/D01	24	5,3,3	200,200	77
V3-247R2S/D01		5,7,2	200,139	77
V3-2409S/D01		5,9	200,111	77
V3-2412S/D01		5,12	200,84	80
V3-2415S/D01		5,15	200,67	80
V3-0505S/D02	5	5,5	200,200	78
V3-0509S/D02		9,9	111,111	78
V3-0512S/D02		12,12	84,84	82
V3-0515S/D02		15,15	67,67	82
V3-1205S/D02	12	5,5	200,200	78
V3-1209S/D02		9,9	111,111	78
V3-1212S/D02		12,12	84,84	82
V3-1215S/D02		15,15	67,67	82
V3-2405S/D02	24	5,5	200,200	78
V3-2409S/D02		9,9	111,111	78
V3-2412S/D02		12,12	84,84	82
V3-2415S/D02		15,15	67,67	82

1. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range $\pm 10\%$
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
Ripple and Noise (at 20 MHz BW) $(\pm) 75\text{mVp-p}$, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 1.2\% / 1.0\%$ of Vin
Load Voltage Regulation $\pm 8\%$, load=20~100%
Temperature Coefficient $\pm 0.02\% / ^\circ\text{C}$

General Specifications:

Efficiency 77% ~ 82%
Switching Frequency 125 KHz, Typ.

Environmental Specification:

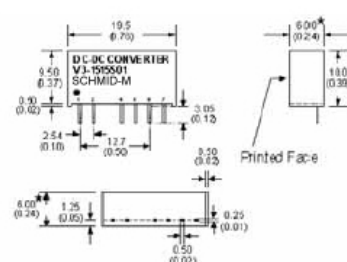
Operating Temperature (Ambient) $-40^\circ\text{C} \sim +85^\circ\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^\circ\text{C} \sim +125^\circ\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

Capacitive Load: 390 μF , 390 μF , Max.

Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = 4.7 $\mu\text{F}/100\text{V} \sim 47\mu\text{F}/100\text{V}$.

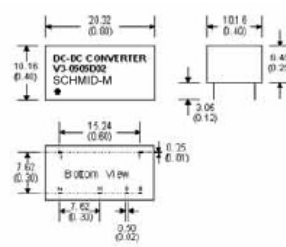
MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 Pin SIL package



Pin #	STANDARD
1	+V Input
2	-V Input
4	+V1 Output
5	-V1 Output
6	+V2 Output
7	-V2 Output

14 Pin DIL package



Pin #	STANDARD
1	+V Input
7	N.C.
8	-V2 Output
9	+V2 Output
10	-V1 Output
11	+V1 Output
14	+V Input

Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. "*" SIL Package: 7.20 (0.28) for 48 Vdc variants; DIL Package: 6.88 (0.27) for 48 Vdc variants.

DC/DC Converter – V3-SS/DS , V3-S/D

2 WATT

Single / Dual Output

FEATURES

- 1000 Vdc Isolation (3000 Vdc and 6000 Vdc Isolation available)
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Unregulated
- Non-conductive Black Plastic case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V3-0505SS/DS	5	5	400	79
V3-0509SS/DS		9	222	84
V3-0512SS/DS		12	167	86
V3-0515SS/DS		15	133	84
V3-0524SS/DS	5	24	83	85
V3-0505S/D		±5	±200	73
V3-0509S/D		±9	±111	78
V3-0512S/D		±12	±84	80
V3-0515S/D	5	±15	±67	82
V3-0524S/D		±24	±42	81
V3-1205SS/DS	12	5	400	79
V3-1209SS/DS		9	222	84
V3-1212SS/DS		12	167	86
V3-1215SS/DS		15	133	85
V3-1224SS/DS	12	24	83	84
V3-1205S/D		±5	±200	75
V3-1209S/D		±9	±111	81
V3-1212S/D		±12	±84	83
V3-1215S/D	12	±15	±67	85
V3-1224S/D		±24	±42	86
V3-2405SS/DS	24	5	400	82
V3-2409SS/DS		9	222	84
V3-2412SS/DS		12	167	88
V3-2415SS/DS		15	133	85
V3-2424SS/DS	24	24	83	86
V3-2405S/D		±5	±200	77
V3-2409S/D		±9	±111	83
V3-2412S/D		±12	±84	84
V3-2415S/D	24	±15	±67	85
V3-2424S/D		±24	±42	88

1. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 10%
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 3\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm) 75\text{mVp-p}$, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 1.2\%$ / 1.0% of Vin
Load Voltage Regulation $\pm 8\%$, Load=20~100%
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 73% ~ 86%
Switching Frequency 125 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

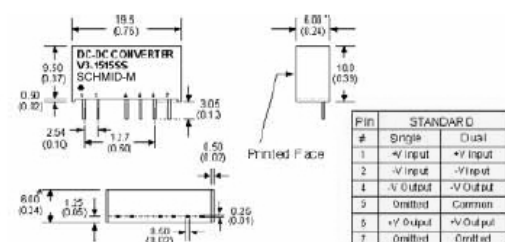
Capacitive Load:

Single Output 470uF, Max.
Dual Output $\pm 390\text{uF}$, Max.

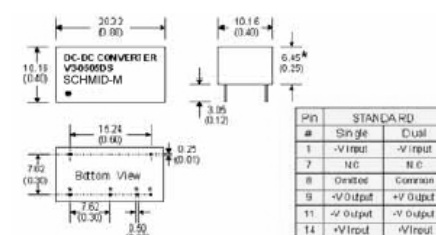
Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = $4.7\mu\text{F}/100\text{V} \sim 47\mu\text{F}/100\text{V}$.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 Pin SIL package



14 Pin DIL package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. "*" SIL Package: 7.20 (0.28) for 48 Vdc variants; DIL Package: 6.88 (0.27) for 48 Vdc variants.

DC/DC Converter – V4-S/D, V4-S/DH

1 WATT

Single Output

FEATURES

- 1000 Vdc Isolation
- Up to 3000 Vdc Isolation
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Regulated
- Non-conductive Black Plastic Case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V4-0505S/D	5	5	200	65/65
V4-057R2S/D		7.2	139	65/65
V4-0509S/D		9	111	68/68
V4-0512S/D		12	84	68/68
V4-0515S/D		15	67	68/68
V4-1205S/D	12	5	200	66/66
V4-127R2S/D		7.2	139	66/66
V4-1209S/D		9	111	68/68
V4-1212S/D		12	84	68/68
V4-1215S/D		15	67	70/70
V4-2405S/D	24	5	200	66/66
V4-247R2S/D		7.2	139	66/66
V4-2409S/D		9	111	68/68
V4-2412S/D		12	84	68/68
V4-2415S/D		15	67	70/70
V4-0505S/DH	5	5	200	65/65
V4-057R2S/DH		7.2	139	65/65
V4-0509S/DH		9	111	68/68
V4-0512S/DH		12	84	68/68
V4-0515S/DH		15	67	68/68
V4-1205S/DH	12	5	200	66/66
V4-127R2S/DH		7.2	139	66/66
V4-1209S/DH		9	111	68/68
V4-1212S/DH		12	84	68/68
V4-1215S/DH		15	67	70/70
V4-2405S/DH	24	5	200	66/66
V4-247R2S/DH		7.2	139	66/66
V4-2409S/DH		9	111	68/68
V4-2412S/DH		12	84	68/68
V4-2415S/DH		15	67	70/70

1. Suffix "H" means 3 KV Isolation.

2. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V

Input Specifications:

Voltage Range $\pm 10\%$
Filter Capacitors

Isolation Specification:

Rated Voltage 1000 Vdc, Standard
Up to 3000 Vdc.
Resistance 1000M Ω Min.
Capacitance 60 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 2\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) 50mVp-p, Max
Short Circuit Protection Momentary
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

Efficiency 65% ~ 70%
Switching Frequency 60 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-25^{\circ}\text{C} \sim +71^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

Capacitive Load:

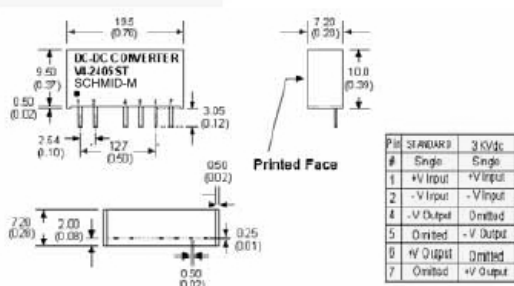
220 μF , Max.

Note:

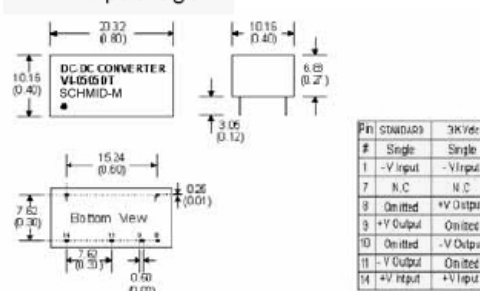
For Vin 48V series, pls. add a capacitor in the input point. Cx = 4.7 μF /100V ~ 47 μF /100V.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 SIL package



14 DIL package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)



DC/DC Converter – V4-S/DT, V4-S/DTH

1 WATT

Single Output

FEATURES

- 1000 Vdc Isolation
- Up to 3000 Vdc Isolation
- 7 Pin SIL // 14 Pin DIL Package
- Low Ripple and Noise
- Regulated
- Non-conductive Black Plastic Case
- MTBF > 2 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V4-0505S/DT	5	5	200	67/65
V4-057R2S/DT		7.2	139	67/65
V4-0509S/DT		9	111	67/65
V4-0512S/DT		12	84	70/68
V4-0515S/DT		15	67	70/68
V4-1205S/DT	12	5	200	65/65
V4-127R2S/DT		7.2	139	67/65
V4-1209S/DT		9	111	67/65
V4-1212S/DT		12	84	70/68
V4-1215S/DT		15	67	70/68
V4-2405S/DT	24	5	200	68/65
V4-247R2S/DT		7.2	139	68/65
V4-2409S/DT		9	111	68/68
V4-2412S/DT		12	84	70/68
V4-2415S/DT		15	67	70/68
V4-0505S/DTH	5	5	200	67/65
V4-057R2S/DTH		7.2	139	67/65
V4-0509S/DTH		9	111	67/65
V4-0512S/DTH		12	84	70/68
V4-0515S/DTH		15	67	70/68
V4-1205S/DTH	12	5	200	65/65
V4-127R2S/DTH		7.2	139	67/65
V4-1209S/DTH		9	111	67/65
V4-1212S/DTH		12	84	70/68
V4-1215S/DTH		15	67	70/68
V4-2405S/DTH	24	5	200	68/65
V4-247R2S/DTH		7.2	139	68/65
V4-2409S/DTH		9	111	68/68
V4-2412S/DTH		12	84	70/68
V4-2415S/DTH		15	67	70/68

1. Suffix "H" means 3 KV Isolation.
2. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V

Input Specifications:

Voltage Range	±10%
Filter	Capacitors

Isolation Specification:

Rated Voltage	1000 Vdc, Standard Up to 3000 Vdc.
Resistance	1000M Ω Min.
Capacitance	60 pF, Typ.

Output Specifications:

Voltage Accuracy:	±2%, Max.
Voltage Balance (Dual Outputs)	±1%
Ripple and Noise (at 20 MHz BW)	50mVp-p, Max
Short Circuit Protection	Momentary
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±1%, Max.
Temperature Coefficient	±0.02% / °C

General Specifications:

Efficiency	65% ~ 70%
Switching Frequency	60 KHz, Typ.

Environmental Specification:

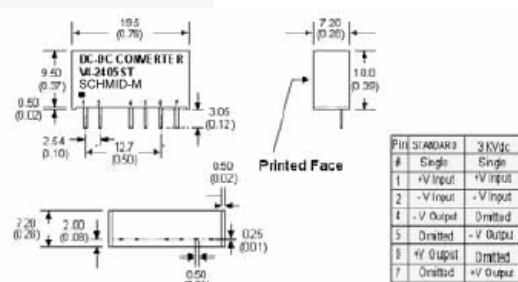
Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	100°C Max.
Storage Temperature	-40°C ~ +125°C
Derating	None Required
Humidity	Up to 90%, Non-condensing
Cooling	Free-air Convection

Capacitive Load: 220μF, Max.

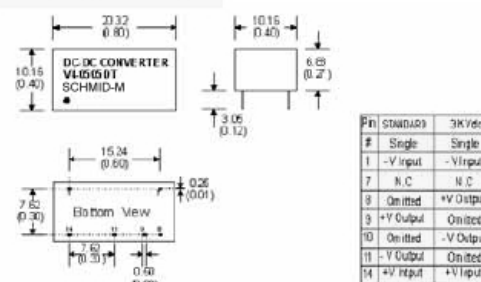
Note: For Vin 48V series, pls. add a capacitor in the input point. Cx = 4.7μF/100V ~ 47μF/100V.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

7 SIL package



14 DIL package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)

DC/DC Converter – V5-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1000 Vdc Isolation (3000 Vdc Isolation available)
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-conductive Black Plastic case
- MTBF > 1.3 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V5-0505S1	5	5	300	66
V5-0509S1		9	167	66
V5-0512S1		12	125	66
V5-0515S1		15	100	70
V5-0524S1	5	24	63	68
V5-0505D1		±5	±150	55
V5-057R2D1		±7.2	±104	55
V5-0509D1		±9	±84	57
V5-0512D1	5	±12	±63	60
V5-0515D1		±15	±50	57
V5-1205S1	12	5	300	67
V5-1209S1		9	167	67
V5-1212S1		12	125	70
V5-1215S1		15	100	70
V5-1224S1	12	24	63	68
V5-1205D1		±5	±150	56
V5-127R2D1		±7.2	±104	56
V5-1209D1		±9	±84	58
V5-1212D1	12	±12	±63	62
V5-1215D1		±15	±50	60
V5-2405S1	24	5	300	63
V5-2409S1		9	167	63
V5-2412S1		12	125	65
V5-2415S1		15	100	67
V5-2424S1	24	24	63	64
V5-2405D1		±5	±150	55
V5-247R2D1		±7.2	±104	55
V5-2409D1		±9	±84	55
V5-2412D1	24	±12	±63	58
V5-2415D1		±15	±50	58

1. Suffix "M" Metal Instead of Plastic case Package.
 2. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range	±10%
Filter	π (Pi) Network

Isolation Specification:

Rated Voltage	1000 Vdc, Min.
Resistance	1000M Ω Min.
Capacitance	390 pF, Typ.

Output Specifications:

Voltage Accuracy:	±2%, Max.
Voltage Balance (Dual Outputs)	±1%
Ripple and Noise (at 20 MHz BW)	75mVp-p, Max
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±0.5%, Max.
Temperature Coefficient	±0.02% / °C

General Specifications:

Efficiency	55% ~ 70%
Switching Frequency	40 KHz, Typ.

Environmental Specification:

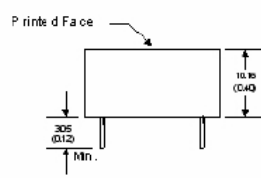
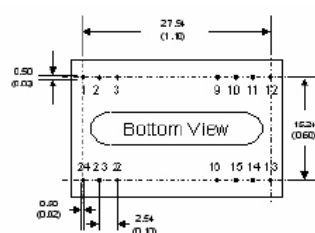
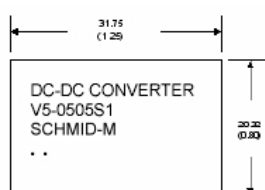
Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	95°C Max.
Storage Temperature	-40°C ~ +125°C
Humidity	Up to 90%, Non-condensing
Cooling	Free-air Convection

Capacitive Load:

Single Output	470μF, Max.
Dual Output	±220μF, Max.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 DIL Package



Pin	STANDARD	
#	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal case dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V5-S/D3

3 WATT

Single / Dual Output

FEATURES

- 1000 Vdc Isolation (3000 Vdc Isolation available)
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-conductive Black Plastic case
- MTBF > 1.3 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V5-0505S3	5	5	600	65
V5-0509S3		9	333	70
V5-0512S3		12	250	70
V5-0515S3		15	200	70
V5-0524S3	5	24	125	67
V5-0505D3		±5	±300	52
V5-057R2D3		±7.2	±208	52
V5-0509D3		±9	±167	55
V5-0512D3	5	±12	±125	60
V5-0515D3		±15	±100	64
V5-1205S3	12	5	600	66
V5-1209S3		9	333	68
V5-1212S3		12	250	74
V5-1215S3		15	300	72
V5-1224S3	12	24	125	70
V5-1205D3		±5	±300	57
V5-127R2D3		±7.2	±208	57
V5-1209D3		±9	±167	60
V5-1212D3	12	±12	±125	62
V5-1215D3		±15	±100	64
V5-2405S3	24	5	600	66
V5-2409S3		9	333	68
V5-2412S3		12	250	70
V5-2415S3		15	200	70
V5-2424S3	24	24	125	74
V5-2405D3		±5	±300	52
V5-247R2D3		±7.2	±208	54
V5-2409D3		±9	±167	57
V5-2412D3	24	±12	±125	64
V5-2415D3		±15	±100	66

1. Suffix "M" Metal Instead of Plastic case Package.
2. Input Voltage is from 5 V to 48 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range ±10%
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1000 Vdc, Min.
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: ±2%, Max.
Voltage Balance (Dual Outputs) ±1%
Ripple and Noise (at 20 MHz BW) 75mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation ±0.5%, Max.
Load Voltage Regulation ±0.5%, Max.
Temperature Coefficient ±0.02% / °C

General Specifications:

Efficiency 55% ~ 72%
Switching Frequency 40 KHz, Typ.

Environmental Specification:

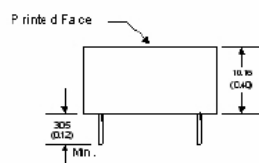
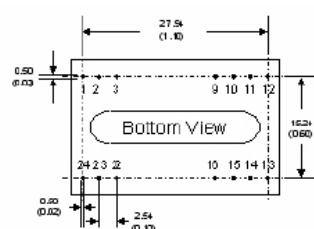
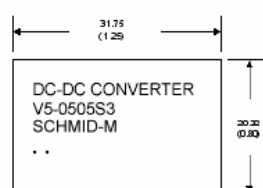
Operating Temperature (Ambient) -40°C ~ +85°C
Case Temperature 95°C Max.
Storage Temperature -40°C ~ +125°C
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

Capacitive Load:

Single Output 470 μ F, Max.
Dual Output ±220 μ F, Max.

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 DIL Package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Metal case dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V6-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.1 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V6-1205S1	9-18	5	300	74
V6-1209S1		9	167	77
V6-1212S1		12	125	76
V6-1215S1		15	100	78
V6-1224S1		24	63	78
V6-1205D1	9-18	±5	±150	74
V6-1209D1		±9	±84	76
V6-1212D1		±12	±63	75
V6-1215D1		±15	±50	78
V6-1224D1		±24	±32	78
V6-2405S1	18-36	5	300	74
V6-2409S1		9	167	74
V6-2412S1		12	125	76
V6-2415S1		15	100	76
V6-2424S1		24	63	77
V6-2405D1	18-36	±5	±150	75
V6-2409D1		±9	±84	76
V6-2412D1		±12	±63	77
V6-2415D1		±15	±50	78
V6-2424D1		±24	±32	78
V6-4805S1	36-72	5	300	73
V6-4809S1		9	167	75
V6-4812S1		12	125	77
V6-4815S1		15	100	77
V6-4824S1		24	63	78
V6-4805D1	36-72	±5	±150	74
V6-4809D1		±9	±84	75
V6-4812D1		±12	±63	77
V6-4815D1		±15	±50	78
V6-4824D1		±24	±32	78

1. Suffix "P" Plastic Instead of Metal case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

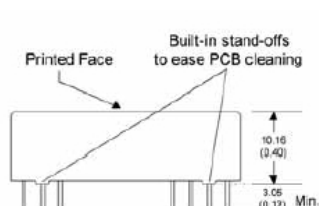
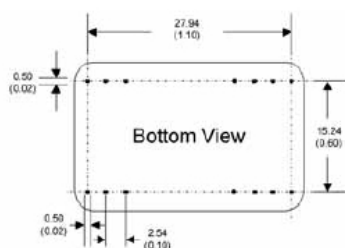
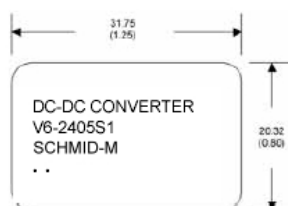
Efficiency 73% ~ 78%
 Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V6-S/D2

2 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.1 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V6-1205S2	9-18	5	400	75
V6-1209S2		9	223	78
V6-1212S2		12	167	78
V6-1215S2		15	134	78
V6-1224S2		24	84	79
V6-1205D2	9-18	±5	±200	74
V6-1209D2		±9	±112	74
V6-1212D2		±12	±83	76
V6-1215D2		±15	±67	77
V6-1224D2		±24	±42	76
V6-2405S2	18-36	5	400	78
V6-2409S2		9	223	80
V6-2412S2		12	167	79
V6-2415S2		15	134	78
V6-2424S2		24	84	80
V6-2405D2	18-36	±5	±200	75
V6-2409D2		±9	±112	75
V6-2412D2		±12	±83	79
V6-2415D2		±15	±67	79
V6-2424D2		±24	±42	78
V6-4805S2	36-72	5	400	75
V6-4809S2		9	223	78
V6-4812S2		12	167	79
V6-4815S2		15	134	80
V6-4824S2		24	84	80
V6-4805D2	36-72	±5	±200	74
V6-4809D2		±9	±112	75
V6-4812D2		±12	±83	78
V6-4815D2		±15	±67	78
V6-4824D2		±24	±42	79

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

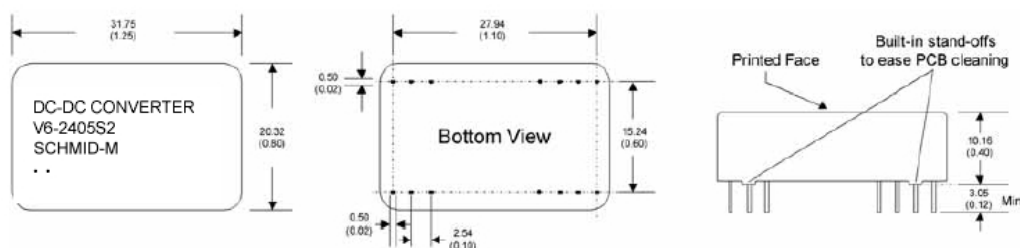
Efficiency 74% ~ 80%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V6-S/D3

3 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.1 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V6-1205S3	9-18	5	600	76
V6-1209S3		9	334	77
V6-1212S3		12	250	79
V6-1215S3		15	200	79
V6-1224S3		24	125	79
V6-1205D3	9-18	±5	±300	77
V6-1209D3		±9	±167	78
V6-1212D3		±12	±125	78
V6-1215D3		±15	±100	78
V6-1224D3		±24	±63	78
V6-2405S3	18-36	5	600	80
V6-2409S3		9	334	80
V6-2412S3		12	250	82
V6-2415S3		15	200	82
V6-2424S3		24	125	80
V6-2405D3	18-36	±5	±300	78
V6-2409D3		±9	±167	79
V6-2412D3		±12	±125	80
V6-2415D3		±15	±100	80
V6-2424D3		±24	±63	80
V6-4805S3	36-72	5	600	77
V6-4809S3		9	334	78
V6-4812S3		12	250	80
V6-4815S3		15	200	80
V6-4824S3		24	125	80
V6-4805D3	36-72	±5	±300	78
V6-4809D3		±9	±167	79
V6-4812D3		±12	±125	80
V6-4815D3		±15	±100	80
V6-4824D3		±24	±63	80

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

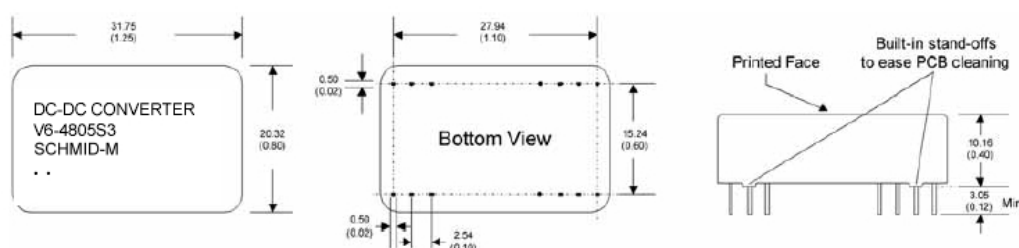
Efficiency 76% ~ 82%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V6-S/D4

4 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.1 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V6-1205S4	9-18	5	800	77
V6-1209S4		9	445	80
V6-1212S4		12	333	80
V6-1215S4		15	267	80
V6-1224S4		24	167	80
V6-1205D4	9-18	±5	±400	77
V6-1209D4		±9	±223	80
V6-1212D4		±12	±167	80
V6-1215D4		±15	±134	80
V6-1224D4		±24	±84	80
V6-2405S4	18-36	5	800	79
V6-2409S4		9	445	82
V6-2412S4		12	333	82
V6-2415S4		15	267	82
V6-2424S4		24	167	82
V6-2405D4	18-36	±5	±400	79
V6-2409D4		±9	±223	82
V6-2412D4		±12	±167	82
V6-2415D4		±15	±134	82
V6-2424D4		±24	±84	82
V6-4805S4	36-72	5	800	78
V6-4809S4		9	445	82
V6-4812S4		12	333	82
V6-4815S4		15	267	82
V6-4824S4		24	167	82
V6-4805D4	36-72	±5	±400	76
V6-4809D4		±9	±223	82
V6-4812D4		±12	±167	82
V6-4815D4		±15	±134	82
V6-4824D4		±24	±84	82

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

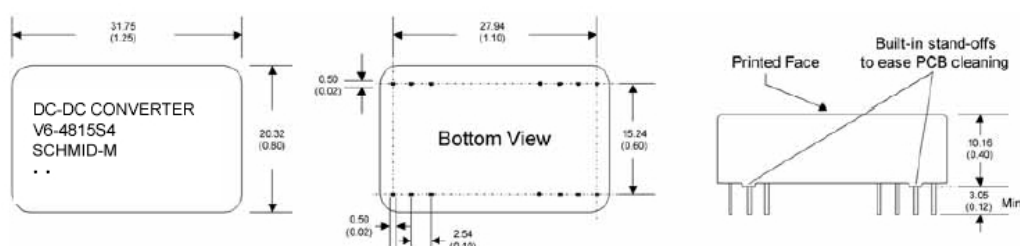
Efficiency 76% ~ 82%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V6-S/D5

5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.1 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V6-1205S5	9-18	5	1000	77
V6-1209S5		9	556	80
V6-1212S5		12	417	80
V6-1215S5		15	333	80
V6-1224S5		24	209	80
V6-1205D5	9-18	±5	±500	77
V6-1209D5		±9	±278	80
V6-1212D5		±12	±208	80
V6-1215D5		±15	±167	80
V6-1224D5		±24	±105	80
V6-2405S5	18-36	5	1000	78
V6-2409S5		9	556	82
V6-2412S5		12	417	82
V6-2415S5		15	333	82
V6-2424S5		24	209	82
V6-2405D5	18-36	±5	±500	78
V6-2409D5		±9	±278	82
V6-2412D5		±12	±208	82
V6-2415D5		±15	±167	82
V6-2424D5		±24	±105	82
V6-4805S5	36-72	5	1000	80
V6-4809S5		9	556	82
V6-4812S5		12	417	82
V6-4815S5		15	333	82
V6-4824S5		24	209	82
V6-4805D5	36-72	±5	±500	80
V6-4809D5		±9	±278	82
V6-4812D5		±12	±208	82
V6-4815D5		±15	±167	80
V6-4824D5		±24	±105	80

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

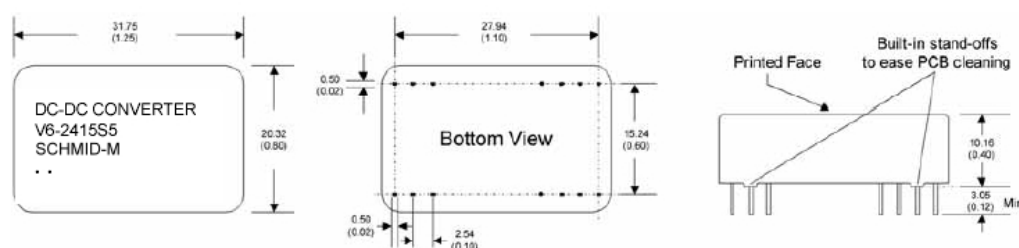
Efficiency 77% ~ 82%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	+V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V6-S/D6

6 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- MTBF > 1.1 MHours

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V6-1205S6	9-18	5	1200	77
V6-1209S6		9	667	75
V6-1212S6		12	500	80
V6-1215S6		15	400	80
V6-1224S6		24	250	80
V6-1205D6	9-18	±5	±600	77
V6-1209D6		±9	±334	75
V6-1212D6		±12	±250	80
V6-1215D6		±15	±200	80
V6-1224D6		±24	±125	80
V6-2405S6	18-36	5	1200	80
V6-2409S6		9	667	83
V6-2412S6		12	500	83
V6-2415S6		15	400	83
V6-2424S6		24	250	83
V6-2405D6	18-36	±5	±600	80
V6-2409D6		±9	±334	83
V6-2412D6		±12	±250	83
V6-2415D6		±15	±200	83
V6-2424D6		±24	±125	83
V6-4805S6	36-72	5	1200	80
V6-4809S6		9	667	83
V6-4812S6		12	500	83
V6-4815S6		15	400	83
V6-4824S6		24	250	83
V6-4805D6	36-72	±5	±600	80
V6-4809D6		±9	±334	83
V6-4812D6		±12	±250	83
V6-4815D6		±15	±200	82
V6-4824D6		±24	±125	82

1. Suffix " P " Plastic Instead of Metal case Package.

2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc

Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Restart Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

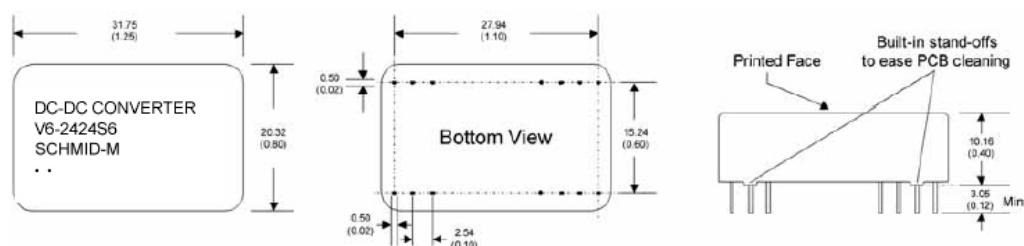
Efficiency 75% ~ 83%
Switching Frequency 260 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +71^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing
Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
2. Plastic Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – V7-S/D7

7.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation
- Wide 2:1 Input Range
- 2" X 1" X 0.4" Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- High Efficiency Up to 90%

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V7-1205S7	9-18	5	1500	83
V7-1209S7		9	833	84
V7-1212S7		12	625	84
V7-1215S7		15	500	84
V7-1224S7		24	312	85
V7-1205D7	9-18	±5	±750	83
V7-1209D7		±9	±416	84
V7-1212D7		±12	±312	84
V7-1215D7		±15	±250	84
V7-1224D7		±24	±156	85
V7-2405S7	18-36	5	1500	85
V7-2409S7		9	833	86
V7-2412S7		12	625	87
V7-2415S7		15	500	87
V7-2424S7		24	312	88
V7-2405D7	18-36	±5	±750	85
V7-2409D7		±9	±416	86
V7-2412D7		±12	±312	87
V7-2415D7		±15	±250	87
V7-2424D7		±24	±156	88
V7-4805S7	36-72	5	1500	85
V7-4809S7		9	833	85
V7-4812S7		12	625	88
V7-4815S7		15	500	88
V7-4824S7		24	312	89
V7-4805D7	36-72	±5	±750	85
V7-4809D7		±9	±416	85
V7-4812D7		±12	±312	88
V7-4815D7		±15	±250	88
V7-4824D7		±24	±156	89
1. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.				

Input Specifications:

Input Specifications:	
Voltage Range	12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter	Capacitors

Filter

Isolation Specification:

Rated Voltage	1500 Vdc, Standard
Resistance	1000M Ω Min.
Capacitance	500 pF, Typ.

Output Specifications:

Voltage Accuracy:	±1%, Max.
Voltage Balance (Dual Outputs)	±1%
Ripple and Noise (at 20 MHz BW)	±100mVp-p, Max
Short Circuit Protection	Continuous
Short Circuit Protection	Automatic
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±0.5%, Max.
Temperature Coefficient	±0.02% / °C
Over Load Protection	130 % (Typ.) of FL at Normal Input.

General Specifications:

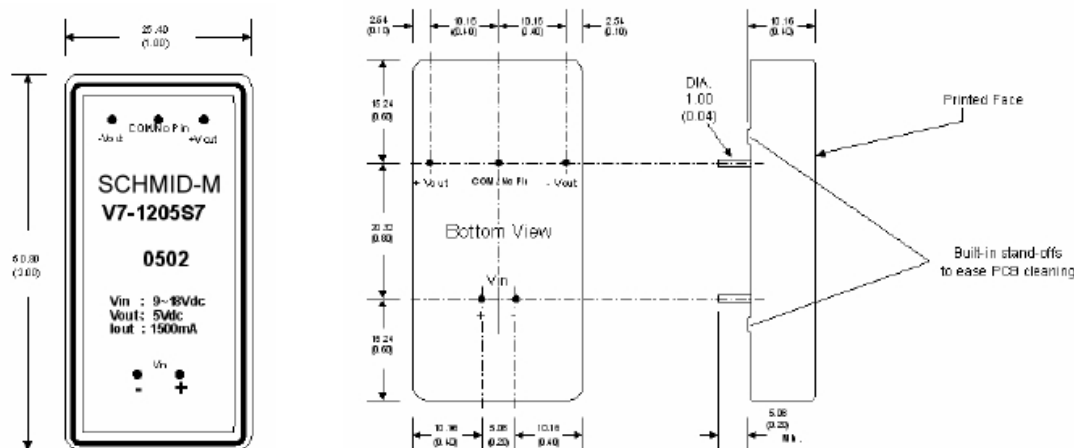
Efficiency	80% ~ 90%
Switching Frequency	200 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	100°C Max.
Storage Temperature	-40°C ~ +125°C
Derating	None Required
Humidity	Up to 90%, Non-condensing

MECHANICAL DIMENSIONS & PIN CONNECTIONS

2" X1" package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)



DC/DC Converter – V7-S/D10

10 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation
- Wide 2:1 Input Range
- 2" X 1" X 0.4" Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- High Efficiency Up to 90%

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V7-1205S10	9-18	5	2000	83
V7-1209S10		9	1111	84
V7-1212S10		12	833	85
V7-1215S10		15	666	85
V7-1224S10	9-18	24	416	86
V7-1205D10		±5	±1000	83
V7-1209D10		±9	±555	84
V7-1212D10		±12	±416	85
V7-1215D10	9-18	±15	±333	85
V7-1224D10		±24	±208	86
V7-2405S10	18-36	5	2000	85
V7-2409S10		9	1111	87
V7-2412S10		12	833	88
V7-2415S10		15	666	88
V7-2424S10	18-36	24	416	89
V7-2405D10		±5	±1000	85
V7-2409D10		±9	±555	87
V7-2412D10		±12	±416	88
V7-2415D10	18-36	±15	±333	88
V7-2424D10		±24	±208	89
V7-4805S10	36-72	5	2000	85
V7-4809S10		9	1111	86
V7-4812S10		12	833	89
V7-4815S10		15	666	89
V7-4824S10	36-72	24	416	89
V7-4805D10		±5	±1000	85
V7-4809D10		±9	±555	86
V7-4812D10		±12	±416	89
V7-4815D10	36-72	±15	±333	89
V7-4824D10		±24	±208	89

1. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter Capacitors

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 500 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $\pm 100\text{mVp-p}$, Max
Short Circuit Protection Continuous
Short Circuit Protection Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$
Over Load Protection 130 % (Typ.) of FL at Normal Input.

General Specifications:

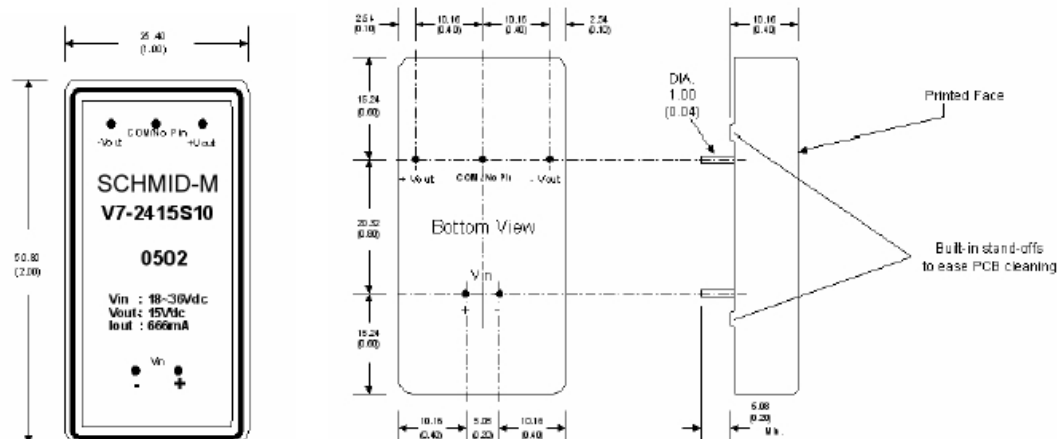
Efficiency 80% ~ 90%
Switching Frequency 200 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing

MECHANICAL DIMENSIONS & PIN CONNECTIONS

2" X 1" package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)

Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)



DC/DC Converter – V7-S/D15

15 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation
- Wide 2:1 Input Range
- 2" X 1" X 0.4" Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- High Efficiency Up to 92%

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V7-1205S15	9-18	5	3000	83
V7-1209S15		9	1666	84
V7-1212S15		12	1250	85
V7-1215S15		15	1000	85
V7-1224S15		24	625	86
V7-1205D15	9-18	±5	±1500	83
V7-1209D15		±9	±833	84
V7-1212D15		±12	±625	85
V7-1215D15		±15	±500	85
V7-1224D15		±24	±312	86
V7-2405S15	18-36	5	3000	85
V7-2409S15		9	1666	87
V7-2412S15		12	1250	88
V7-2415S15		15	1000	88
V7-2424S15		24	625	90
V7-2405D15	18-36	±5	±1500	85
V7-2409D15		±9	±833	87
V7-2412D15		±12	±625	88
V7-2415D15		±15	±500	88
V7-2424D15		±24	±312	90
V7-4805S15	36-72	5	3000	86
V7-4809S15		9	1666	87
V7-4812S15		12	1250	89
V7-4815S15		15	1000	89
V7-4824S15		24	625	90
V7-4805D15	36-72	±5	±1500	86
V7-4809D15		±9	±833	87
V7-4812D15		±12	±625	89
V7-4815D15		±15	±500	89
V7-4824D15		±24	±312	90

1. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter Capacitors

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 500 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm)100\text{mVp-p}$, Max
Short Circuit Protection Continuous
Short Circuit Protection Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$
Over Load Protection 130 % (Typ.) of FL at Normal Input.

General Specifications:

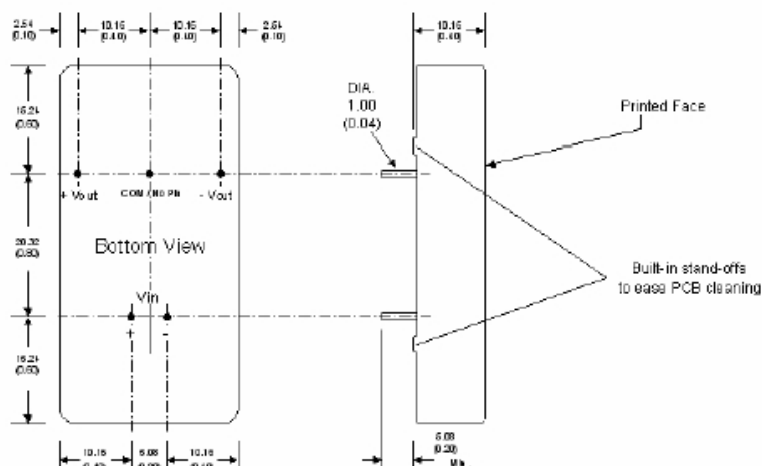
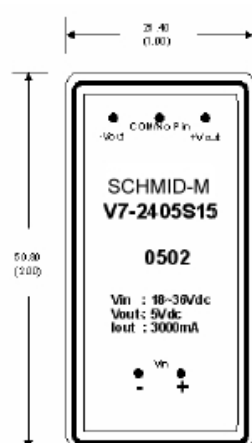
Efficiency 83% ~ 92%
Switching Frequency 200 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing

MECHANICAL DIMENSIONS & PIN CONNECTIONS

2" X 1" package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)

DC/DC Converter – V7-S/D15L

15 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation
- Wide 2:1 Input Range
- 2" X 2" X 0.4" Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- High Efficiency Up to 92%

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V7-1205S15L	9-18	5	3000	84
V7-1209S15L		9	1666	84
V7-1212S15L		12	1250	86
V7-1215S15L		15	1000	86
V7-1224S15L	9-18	24	625	88
V7-1205D15L		±5	±1500	84
V7-1209D15L		±9	±833	84
V7-1212D15L		±12	±625	86
V7-1215D15L	9-18	±15	±500	86
V7-1224D15L		±24	±312	88
V7-2405S15L	18-36	5	3000	86
V7-2409S15L		9	1666	87
V7-2412S15L		12	1250	88
V7-2415S15L		15	1000	88
V7-2424S15L	18-36	24	625	89
V7-2405D15L		±5	±1500	86
V7-2409D15L		±9	±833	87
V7-2412D15L		±12	±625	88
V7-2415D15L	18-36	±15	±500	88
V7-2424D15L		±24	±312	89
V7-4805S15L	36-72	5	3000	86
V7-4809S15L		9	1666	87
V7-4812S15L		12	1250	88
V7-4815S15L		15	1000	88
V7-4824S15L	36-72	24	625	91
V7-4805D15L		±5	±1500	86
V7-4809D15L		±9	±833	87
V7-4812D15L		±12	±625	88
V7-4815D15L	36-72	±15	±500	88
V7-4824D15L		±24	±312	91

1. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter Capacitors

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 500 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$)100mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Protection Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$
Over Load Protection 130 % (Typ.) of FL at Normal Input.

General Specifications:

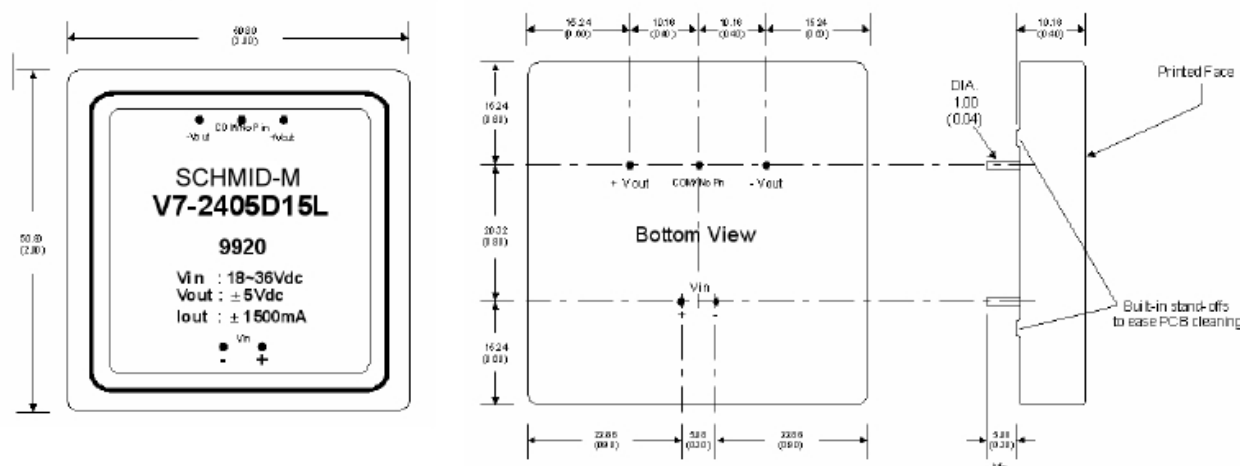
Efficiency 83% ~ 92%
Switching Frequency 200 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing

MECHANICAL DIMENSIONS & PIN CONNECTIONS

2" X2" package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)



DC/DC Converter – V7-S/D20L

20 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation
- Wide 2:1 Input Range
- 2" X 2" X 0.4" Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- High Efficiency Up to 92%

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V7-1205S20L	9-18	5	4000	85
V7-1209S20L		9	2222	85
V7-1212S20L		12	1666	87
V7-1215S20L		15	1333	87
V7-1224S20L		24	833	88
V7-1205D20L	9-18	±5	±2000	85
V7-1209D20L		±9	±1111	85
V7-1212D20L		±12	±833	87
V7-1215D20L		±15	±666	87
V7-1224D20L		±24	±416	88
V7-2405S20L	18-36	5	4000	86
V7-2409S20L		9	2222	87
V7-2412S20L		12	1666	88
V7-2415S20L		15	1333	88
V7-2424S20L		24	833	89
V7-2405D20L	18-36	±5	±2000	86
V7-2409D20L		±9	±1111	87
V7-2412D20L		±12	±833	88
V7-2415D20L		±15	±666	88
V7-2424D20L		±24	±416	89
V7-4805S20L	36-72	5	4000	86
V7-4809S20L		9	2222	87
V7-4812S20L		12	1666	89
V7-4815S20L		15	1333	89
V7-4824S20L		24	833	91
V7-4805D20L	36-72	±5	±2000	86
V7-4809D20L		±9	±1111	87
V7-4812D20L		±12	±833	89
V7-4815D20L		±15	±666	89
V7-4824D20L		±24	±416	91

1. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter Capacitors

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 500 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) $(\pm)100\text{mVp-p}$, Max
Short Circuit Protection Continuous
Short Circuit Protection Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$
Over Load Protection 130 % (Typ.) of FL at Normal Input.

General Specifications:

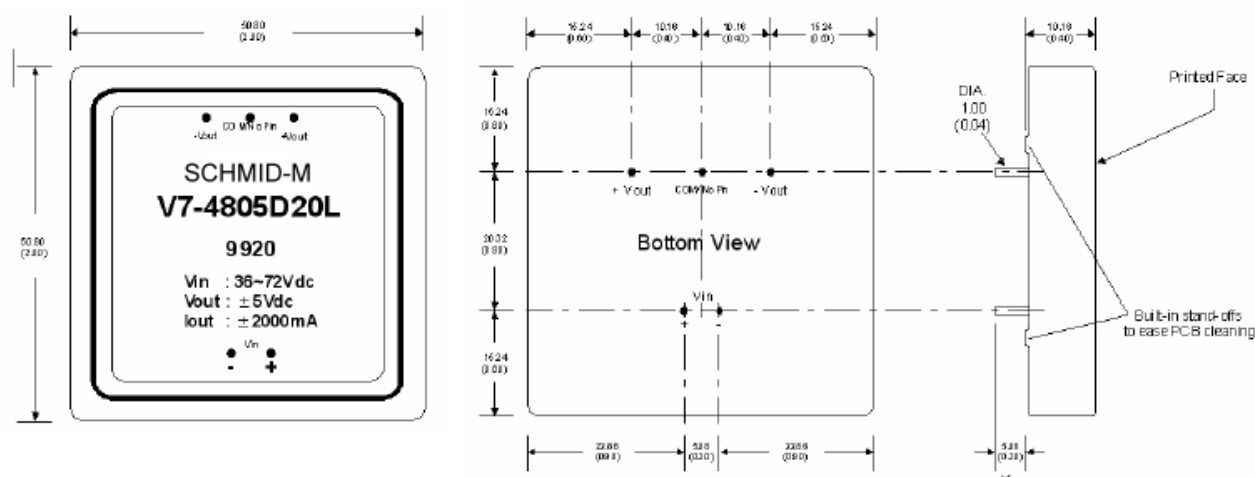
Efficiency 84% ~ 92%
Switching Frequency 200 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing

MECHANICAL DIMENSIONS & PIN CONNECTIONS

2" X2" package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)

DC/DC Converter – V7-S/D30L

30 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation
- Wide 2:1 Input Range
- 2" X 2" X 0.4" Package
- Regulated
- Continuous Short Circuit Protection
- Nickel-Coated Copper Metal
- High Efficiency Up to 92%

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
V7-1205S30L	9-18	5	6000	85
V7-1209S30L		9	3333	85
V7-1212S30L		12	2500	88
V7-1215S30L		15	2000	88
V7-1224S30L	9-18	24	1250	89
V7-1205D30L		±5	±3000	85
V7-1209D30L		±9	±1666	85
V7-1212D30L		±12	±1250	88
V7-1215D30L	18-36	±15	±1000	88
V7-1224D30L		±24	±625	89
V7-2405S30L		5	6000	86
V7-2409S30L		9	3333	87
V7-2412S30L	18-36	12	2500	88
V7-2415S30L		15	2000	88
V7-2424S30L		24	1250	90
V7-2405D30L		±5	±3000	86
V7-2409D30L	36-72	±9	±1666	87
V7-2412D30L		±12	±1250	88
V7-2415D30L		±15	±1000	88
V7-2424D30L		±24	±625	90
V7-4805S30L	36-72	5	6000	87
V7-4809S30L		9	3333	88
V7-4812S30L		12	2500	89
V7-4815S30L		15	2000	89
V7-4824S30L	36-72	24	1250	92
V7-4805D30L		±5	±3000	87
V7-4809D30L		±9	±1666	88
V7-4812D30L		±12	±1250	89
V7-4815D30L	36-72	±15	±1000	89
V7-4824D30L		±24	±625	92

1. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
Filter Capacitors

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
Resistance 1000M Ω Min.
Capacitance 500 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
Voltage Balance (Dual Outputs) $\pm 1\%$
Ripple and Noise (at 20 MHz BW) ($\pm$)100mVp-p, Max
Short Circuit Protection Continuous
Short Circuit Protection Automatic
Line Voltage Regulation $\pm 0.5\%$, Max.
Load Voltage Regulation $\pm 0.5\%$, Max.
Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$
Over Load Protection 130 % (Typ.) of FL at Normal Input.

General Specifications:

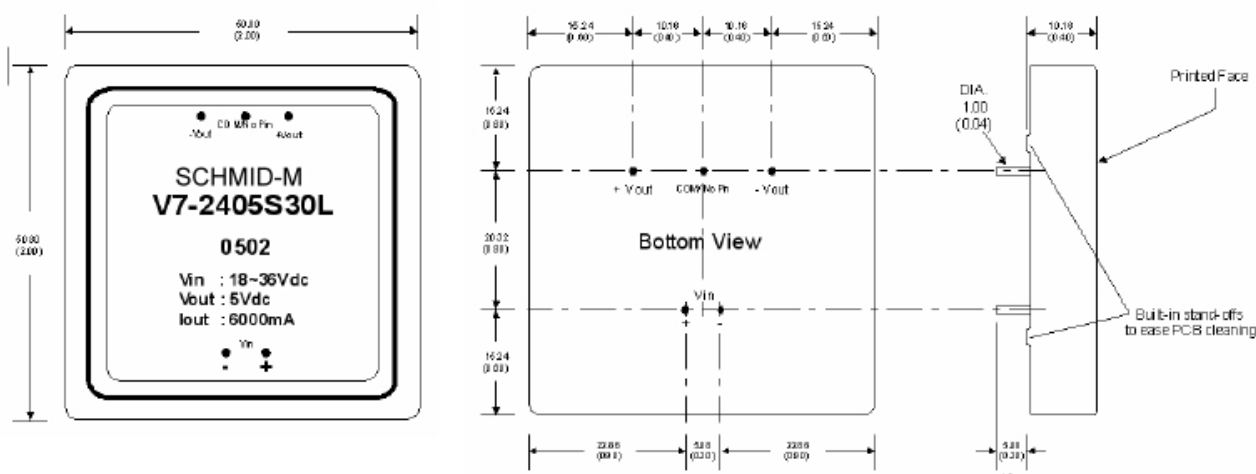
Efficiency 84% ~ 92%
Switching Frequency 200 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Case Temperature 100°C Max.
Storage Temperature $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
Derating None Required
Humidity Up to 90%, Non-condensing

MECHANICAL DIMENSIONS & PIN CONNECTIONS

2" X2" package



Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)

DC/DC Converter – RD-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
RD-1205S1	9-18	5	300	74
RD-1209S1		9	167	77
RD-1212S1		12	125	76
RD-1215S1		15	100	78
RD-1224S1		24	63	78
RD-1205D1	9-18	±5	±150	74
RD-1209D1		±9	±84	76
RD-1212D1		±12	±63	75
RD-1215D1		±15	±50	78
RD-1224D1		±24	±32	78
RD-2405S1	18-36	5	300	74
RD-2409S1		9	167	74
RD-2412S1		12	125	76
RD-2415S1		15	100	76
RD-2424S1		24	63	77
RD-2405D1	18-36	±5	±150	75
RD-2409D1		±9	±84	76
RD-2412D1		±12	±63	77
RD-2415D1		±15	±50	78
RD-2424D1		±24	±32	78
RD-4805S1	36-72	5	300	73
RD-4809S1		9	167	75
RD-4812S1		12	125	77
RD-4815S1		15	100	77
RD-4824S1		24	63	78
RD-4805D1	36-72	±5	±150	74
RD-4809D1		±9	±84	75
RD-4812D1		±12	±63	77
RD-4815D1		±15	±50	78
RD-4824D1		±24	±32	78

1. Suffix " M " Metal Instead of Plastic case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 5Vdc, 4.5-9 Vdc, 12Vdc, 9 -18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

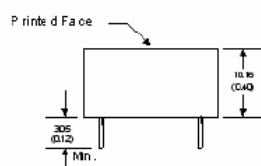
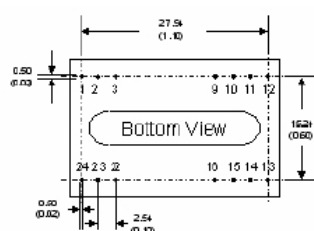
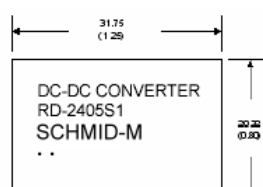
Efficiency 73% ~ 78%
 Switching Frequency 100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
11	N.C	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – RD-S/D3

3 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
RD-1205S3	9-18	5	600	76
RD-1209S3		9	334	77
RD-1212S3		12	250	79
RD-1215S3		15	200	79
RD-1224S3		24	125	79
RD-1205D3	9-18	±5	±300	77
RD-1209D3		±9	±167	78
RD-1212D3		±12	±125	78
RD-1215D3		±15	±100	78
RD-1224D3		±24	±63	78
RD-2405S3	18-36	5	600	80
RD-2409S3		9	334	80
RD-2412S3		12	250	82
RD-2415S3		15	200	82
RD-2424S3		24	125	80
RD-2405D3	18-36	±5	±300	78
RD-2409D3		±9	±167	79
RD-2412D3		±12	±125	80
RD-2415D3		±15	±100	80
RD-2424D3		±24	±63	80
RD-4805S3	36-72	5	600	77
RD-4809S3		9	334	78
RD-4812S3		12	250	80
RD-4815S3		15	200	80
RD-4824S3		24	125	80
RD-4805D3	36-72	±5	±300	78
RD-4809D3		±9	±167	79
RD-4812D3		±12	±125	80
RD-4815D3		±15	±100	80
RD-4824D3		±24	±63	80

1. Suffix " M " Metal Instead of Plastic case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 5Vdc, 4.5-9 Vdc, 12Vdc, 9 -18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

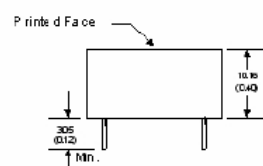
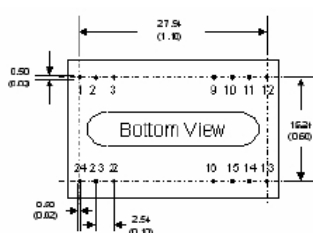
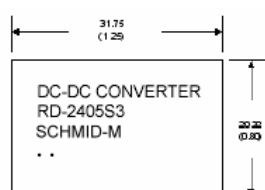
Efficiency 76% ~ 82%
 Switching Frequency 100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD
2	-V Input
3	-V Input
9	Omitted
11	N.C
14	+V Output
16	-V Output
22	+V Input
23	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – RD-S/D6

6 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
RD-1205S6	9-18	5	1200	77
RD-1209S6		9	667	75
RD-1212S6		12	500	80
RD-1215S6		15	400	80
RD-1224S6		24	250	80
RD-1205D6	9-18	±5	±600	77
RD-1209D6		±9	±334	75
RD-1212D6		±12	±250	80
RD-1215D6		±15	±200	80
RD-1224D6		±24	±125	80
RD-2405S6	18-36	5	1200	80
RD-2409S6		9	667	83
RD-2412S6		12	500	83
RD-2415S6		15	400	83
RD-2424S6		24	250	83
RD-2405D6	18-36	±5	±600	80
RD-2409D6		±9	±334	83
RD-2412D6		±12	±250	83
RD-2415D6		±15	±200	83
RD-2424D6		±24	±125	83
RD-4805S6	36-72	5	1200	80
RD-4809S6		9	667	83
RD-4812S6		12	500	83
RD-4815S6		15	400	83
RD-4824S6		24	250	83
RD-4805D6	36-72	±5	±600	80
RD-4809D6		±9	±334	83
RD-4812D6		±12	±250	83
RD-4815D6		±15	±200	82
RD-4824D6		±24	±125	82

1. Suffix " M " Metal Instead of Plastic case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 5Vdc, 4.5-9 Vdc, 12Vdc, 9 -18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

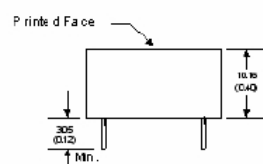
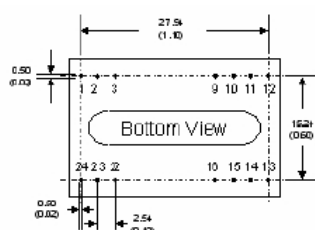
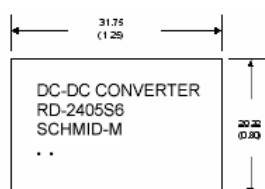
Efficiency 77% ~ 83%
 Switching Frequency 100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+71^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
11	N.C	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – RG-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
RG-1205S1	9-18	5	300	74
RG-1209S1		9	167	77
RG-1212S1		12	125	76
RG-1215S1		15	100	78
RG-1224S1		24	63	78
RG-1205D1	9-18	±5	±150	74
RG-1209D1		±9	±84	76
RG-1212D1		±12	±63	75
RG-1215D1		±15	±50	78
RG-1224D1		±24	±32	78
RG-2405S1	18-36	5	300	74
RG-2409S1		9	167	74
RG-2412S1		12	125	76
RG-2415S1		15	100	76
RG-2424S1		24	63	77
RG-2405D1	18-36	±5	±150	75
RG-2409D1		±9	±84	76
RG-2412D1		±12	±63	77
RG-2415D1		±15	±50	78
RG-2424D1		±24	±32	78
RG-4805S1	36-72	5	300	73
RG-4809S1		9	167	75
RG-4812S1		12	125	77
RG-4815S1		15	100	77
RG-4824S1		24	63	78
RG-4805D1	36-72	±5	±150	74
RG-4809D1		±9	±84	75
RG-4812D1		±12	±63	77
RG-4815D1		±15	±50	78
RG-4824D1		±24	±32	78

1. Suffix "M" Metal Instead of Plastic case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 5Vdc, 4.5-9 Vdc, 12Vdc, 9 -18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

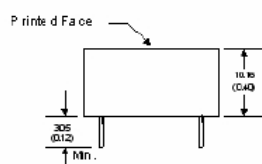
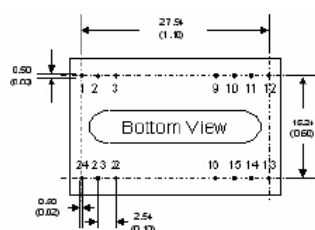
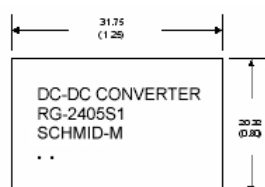
Efficiency 73% ~ 78%
 Switching Frequency 100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C.	Common
11	N.C.	Common
12	-V Output	N.C.
13	+V Output	-V Output
15	N.C.	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – RJ-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
RJ-243R3S1	9-36	3.3	400	72
RJ-2405S1		5	300	74
RJ-2409S1		9	167	74
RJ-2412S1		12	125	74
RJ-2415S1		15	100	74
RJ-2418S1		18	84	74
RJ-2424S1		24	63	74
RJ-243R3D1	9-36	±3.3	±200	72
RJ-2405D1		±5	±150	74
RJ-2409D1		±9	±84	74
RJ-2412D1		±12	±63	74
RJ-2415D1		±15	±50	74
RJ-2418D1		±18	±42	74
RJ-2424D1		±24	±32	74
RJ-483R3S1	18-72	3.3	400	72
RJ-4805S1		5	300	73
RJ-4809S1		9	167	73
RJ-4812S1		12	125	73
RJ-4815S1		15	100	73
RJ-4818S1		18	84	74
RJ-4824S1		24	63	74
RJ-483R3D1	18-72	±3.3	±200	72
RJ-4805D1		±5	±150	73
RJ-4809D1		±9	±84	73
RJ-4812D1		±12	±63	73
RJ-4815D1		±15	±50	73
RJ-4818D1		±18	±42	73
RJ-4824D1		±24	±32	73

1. Suffix " M " Metal Instead of Plastic case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range	24Vdc, 09-36 Vdc 48Vdc, 36-72 Vdc
Filter	π (Pi) Network

Isolation Specification:

Rated Voltage	1500 Vdc, Standard
Resistance	1000M Ω Min.
Capacitance	390 pF, Typ.

Output Specifications:

Voltage Accuracy:	±1%, Max.
Voltage Balance (Dual Outputs)	±1%
Ripple and Noise (at 20 MHz BW)	(±) 60mRJ-p, Max
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±0.5%, Max.
Temperature Coefficient	±0.02% / °C

General Specifications:

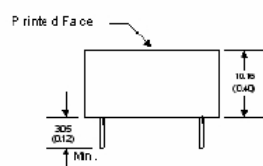
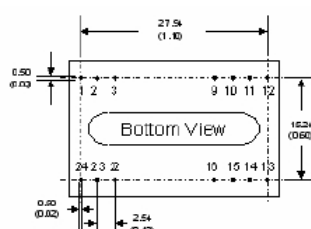
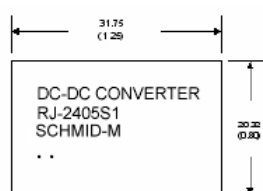
Efficiency	72% ~ 74%
Switching Frequency	100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	100°C Max.
Storage Temperature	-40°C ~ +125°C
Derating	None Required
Humidity	Up to 90%, Non-condensing
Cooling	Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C	Common
11	N.C	Common
12	-V Output	N.C
13	+V Output	-V Output
15	N.C	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – RK-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
RK-243R3S1	9-36	3.3	400	72
RK-2405S1		5	300	74
RK-2409S1		9	167	74
RK-2412S1		12	125	74
RK-2415S1		15	100	74
RK-2418S1		18	84	74
RK-2424S1		24	63	74
RK-243R3D1	9-36	±3.3	±200	72
RK-2405D1		±5	±150	74
RK-2409D1		±9	±84	74
RK-2412D1		±12	±63	74
RK-2415D1		±15	±50	74
RK-2418D1		±18	±42	74
RK-2424D1		±24	±32	74
RK-483R3S1	18-72	3.3	400	72
RK-4805S1		5	300	73
RK-4809S1		9	167	73
RK-4812S1		12	125	73
RK-4815S1		15	100	73
RK-4818S1		18	84	74
RK-4824S1		24	63	74
RK-483R3D1	18-72	±3.3	±200	72
RK-4805D1		±5	±150	73
RK-4809D1		±9	±84	73
RK-4812D1		±12	±63	73
RK-4815D1		±15	±50	73
RK-4818D1		±18	±42	73
RK-4824D1		±24	±32	73

1. Suffix " M " Metal Instead of Plastic case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range	24Vdc, 09-36 Vdc 48Vdc, 36-72 Vdc
Filter	π (Pi) Network

Isolation Specification:

Rated Voltage	1500 Vdc, Standard
Resistance	1000M Ω Min.
Capacitance	390 pF, Typ.

Output Specifications:

Voltage Accuracy:	±1%, Max.
Voltage Balance (Dual Outputs)	±1%
Ripple and Noise (at 20 MHz BW)	(±) 60mRK-p, Max
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±0.5%, Max.
Temperature Coefficient	±0.02% / °C

General Specifications:

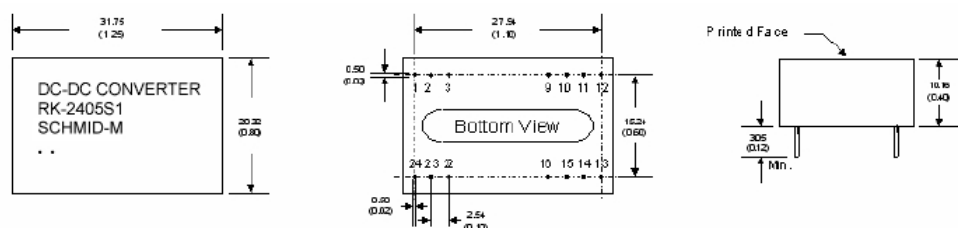
Efficiency	72% ~ 74%
Switching Frequency	100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	100°C Max.
Storage Temperature	-40°C ~ +125°C
Derating	None Required
Humidity	Up to 90%, Non-condensing
Cooling	Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
2	-V Input	-V Input
3	-V Input	-V Input
9	Omitted	Common
11	N.C	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – RP-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 4:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
RP-243R3S1	9-36	3.3	400	72
RP-2405S1		5	300	74
RP-2409S1		9	167	74
RP-2412S1		12	125	74
RP-2415S1		15	100	74
RP-2418S1		18	84	74
RP-2424S1		24	63	74
RP-243R3D1	9-36	±3.3	±200	72
RP-2405D1		±5	±150	74
RP-2409D1		±9	±84	74
RP-2412D1		±12	±63	74
RP-2415D1		±15	±50	74
RP-2418D1		±18	±42	74
RP-2424D1		±24	±32	74
RP-483R3S1	18-72	3.3	400	72
RP-4805S1		5	300	73
RP-4809S1		9	167	73
RP-4812S1		12	125	73
RP-4815S1		15	100	73
RP-4818S1		18	84	74
RP-4824S1		24	63	74
RP-483R3D1	18-72	±3.3	±200	72
RP-4805D1		±5	±150	73
RP-4809D1		±9	±84	73
RP-4812D1		±12	±63	73
RP-4815D1		±15	±50	73
RP-4818D1		±18	±42	73
RP-4824D1		±24	±32	73

1. Suffix " M " Metal Instead of Plastic case Package.
 2. Input Voltage range is from 9 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range	24Vdc, 09-36 Vdc 48Vdc, 36-72 Vdc
Filter	π (Pi) Network

Isolation Specification:

Rated Voltage	1500 Vdc, Standard
Resistance	1000M Ω Min.
Capacitance	390 pF, Typ.

Output Specifications:

Voltage Accuracy:	±1%, Max.
Voltage Balance (Dual Outputs)	±1%
Ripple and Noise (at 20 MHz BW)	(±) 60mRP-p, Max
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Line Voltage Regulation	±0.5%, Max.
Load Voltage Regulation	±0.5%, Max.
Temperature Coefficient	±0.02% / °C

General Specifications:

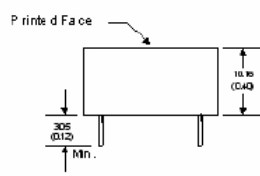
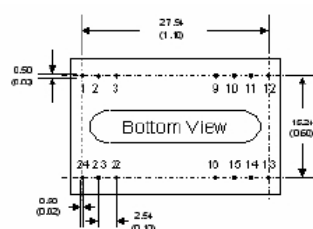
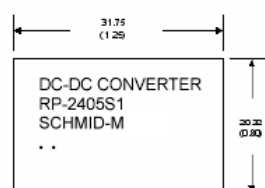
Efficiency	72% ~ 74%
Switching Frequency	100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient)	-40°C ~ +85°C
Case Temperature	100°C Max.
Storage Temperature	-40°C ~ +125°C
Derating	None Required
Humidity	Up to 90%, Non-condensing
Cooling	Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – R6-S/D1

1.5 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
R6-1205S1	9-18	5	300	74
R6-1209S1		9	167	77
R6-1212S1		12	125	76
R6-1215S1		15	100	78
R6-1224S1	9-18	24	63	78
R6-1205D1		±5	±150	74
R6-1209D1		±9	±84	76
R6-1212D1		±12	±63	75
R6-1215D1	18-36	±15	±50	78
R6-1224D1		±24	±32	78
R6-2405S1		5	300	74
R6-2409S1		9	167	74
R6-2412S1		12	125	76
R6-2415S1		15	100	76
R6-2424S1	18-36	24	63	77
R6-2405D1		±5	±150	75
R6-2409D1		±9	±84	76
R6-2412D1		±12	±63	77
R6-2415D1	36-72	±15	±50	78
R6-2424D1		±24	±32	78
R6-4805S1		5	300	73
R6-4809S1		9	167	75
R6-4812S1		12	125	77
R6-4815S1		15	100	77
R6-4824S1	36-72	24	63	78
R6-4805D1		±5	±150	74
R6-4809D1		±9	±84	75
R6-4812D1		±12	±63	77
R6-4815D1		±15	±50	78
R6-4824D1		±24	±32	78

1. Suffix "M" Metal Instead of Plastic case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 5Vdc, 4.5-9 Vdc, 12Vdc, 9-18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

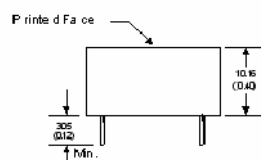
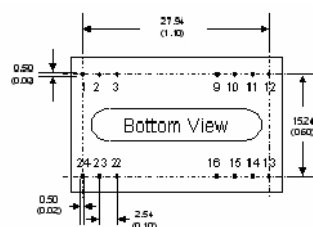
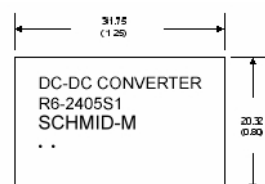
Efficiency 73% ~ 78%
 Switching Frequency 100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – R6-S/D3

3 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
R6-1205S3	9-18	5	600	76
R6-1209S3		9	334	77
R6-1212S3		12	250	79
R6-1215S3		15	200	79
R6-1224S3		24	125	79
R6-1205D3	9-18	±5	±300	77
R6-1209D3		±9	±167	78
R6-1212D3		±12	±125	78
R6-1215D3		±15	±100	78
R6-1224D3		±24	±63	78
R6-2405S3	18-36	5	600	80
R6-2409S3		9	334	80
R6-2412S3		12	250	82
R6-2415S3		15	200	82
R6-2424S3		24	125	80
R6-2405D3	18-36	±5	±300	78
R6-2409D3		±9	±167	79
R6-2412D3		±12	±125	80
R6-2415D3		±15	±100	80
R6-2424D3		±24	±63	80
R6-4805S3	36-72	5	600	77
R6-4809S3		9	334	78
R6-4812S3		12	250	80
R6-4815S3		15	200	80
R6-4824S3		24	125	80
R6-4805D3	36-72	±5	±300	78
R6-4809D3		±9	±167	79
R6-4812D3		±12	±125	80
R6-4815D3		±15	±100	80
R6-4824D3		±24	±63	80

1. Suffix "M" Metal Instead of Plastic case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 5Vdc, 4.5-9 Vdc, 12Vdc, 9 -18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

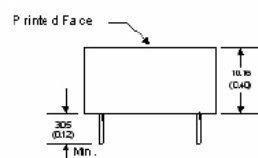
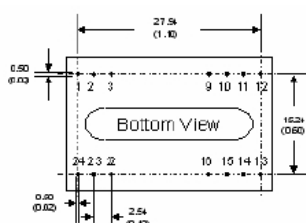
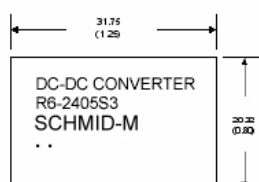
Efficiency 76% ~ 82%
 Switching Frequency 100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+85^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	-V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.

DC/DC Converter – R6-S/D6

6 WATT

Single / Dual Output

FEATURES

- 1500 Vdc Isolation (3500 Vdc Isolation available)
- Wide 2:1 Input Range
- 24 Pin DIL Package
- Regulated
- Continuous Short Circuit Protection
- Non-Conductive Plastic Case

Model Number	Input Vdc	Output Vdc	Output Current (mA)	Efficiency @FL (%)
R6-1205S6	9-18	5	1200	77
R6-1209S6		9	667	75
R6-1212S6		12	500	80
R6-1215S6		15	400	80
R6-1224S6		24	250	80
R6-1205D6	9-18	±5	±600	77
R6-1209D6		±9	±334	75
R6-1212D6		±12	±250	80
R6-1215D6		±15	±200	80
R6-1224D6		±24	±125	80
R6-2405S6	18-36	5	1200	80
R6-2409S6		9	667	83
R6-2412S6		12	500	83
R6-2415S6		15	400	83
R6-2424S6		24	250	83
R6-2405D6	18-36	±5	±600	80
R6-2409D6		±9	±334	83
R6-2412D6		±12	±250	83
R6-2415D6		±15	±200	83
R6-2424D6		±24	±125	83
R6-4805S6	36-72	5	1200	80
R6-4809S6		9	667	83
R6-4812S6		12	500	83
R6-4815S6		15	400	83
R6-4824S6		24	250	83
R6-4805D6	36-72	±5	±600	80
R6-4809D6		±9	±334	83
R6-4812D6		±12	±250	83
R6-4815D6		±15	±200	82
R6-4824D6		±24	±125	82

1. Suffix " M " Metal Instead of Plastic case Package.
 2. Input Voltage range is from 4.5 V to 72 V and Output Voltage is from 3.3 V to 24 V.

Input Specifications:

Voltage Range 5Vdc, 4.5-9 Vdc, 12Vdc, 9 -18 Vdc., 24Vdc, 18-36 Vdc, 48Vdc, 36-72 Vdc
 Filter π (Pi) Network

Isolation Specification:

Rated Voltage 1500 Vdc, Standard
 Resistance 1000M Ω Min.
 Capacitance 390 pF, Typ.

Output Specifications:

Voltage Accuracy: $\pm 1\%$, Max.
 Voltage Balance (Dual Outputs) $\pm 1\%$
 Ripple and Noise (at 20 MHz BW) ($\pm$) 60mVp-p, Max
 Short Circuit Protection Continuous
 Short Circuit Restart Automatic
 Line Voltage Regulation $\pm 0.5\%$, Max.
 Load Voltage Regulation $\pm 0.5\%$, Max.
 Temperature Coefficient $\pm 0.02\%$ / $^{\circ}\text{C}$

General Specifications:

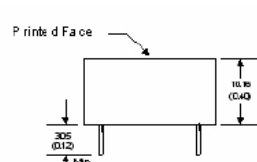
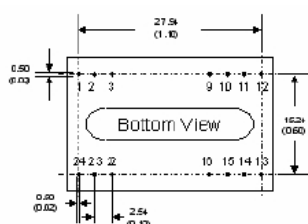
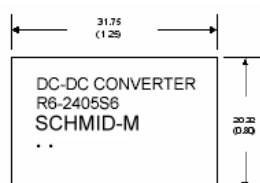
Efficiency 75% ~ 83%
 Switching Frequency 100K ~ 400 KHz, Typ.

Environmental Specification:

Operating Temperature (Ambient) -40°C ~ $+71^{\circ}\text{C}$
 Case Temperature 100°C Max.
 Storage Temperature -40°C ~ $+125^{\circ}\text{C}$
 Derating None Required
 Humidity Up to 90%, Non-condensing
 Cooling Free-air Convection

MECHANICAL DIMENSIONS & PIN CONNECTIONS

24 Pin DIL package



Pin #	STANDARD	
	Single	Dual
1	+V Input	+V Input
2	N.C	-V Output
3	N.C	Common
9	Omitted	Omitted
10	-V Output	Common
11	+V Output	+V Output
12	-V Input	-V Input
13	+V Input	-V Input
14	+V Output	+V Output
15	-V Output	Common
16	Omitted	Omitted
22	N.C	Common
23	N.C	-V Output
24	+V Input	+V Input

- Notes: 1. All dimensions are typical in millimeters (inches). Tolerance x.xx = ± 0.25 (± 0.01)
 2. Metal Case Dimensions are 31.75 * 20.32 * 10.16 mm.



SMD DC/DC Converter – SAT-1W Series

FIXED INPUT ISOLATED& UNREGULATED

1W OUTPUT

DUAL OUTPUT

ULTRAMINIATURE SMD PACKAGE

FEATURES

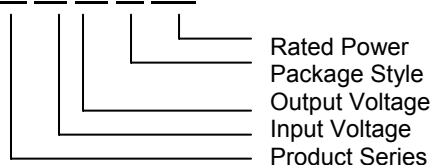
- High Efficiency up to 79%
- Positive& Negative Voltage Output
- Small Footprint
- SMD Package Styles
- Industry Standard Pinout
- UL94-V0 Package
- No Heat sink Required
- 1KVDC Isolation
- High Power Density
- Temperature Range: -40°C ~+85°C
- No External Component Required
- Low Cost
- Custom Service Available

PRODUCT PROGRAM							
Part Number	Input		Output			Efficiency (%, Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nomin	Range		Max	Min		
SA0505T-1W	5	4.5~5.5	±5	±100	±10	72	SMD
SA0509T-1W	5	4.5~5.5	±9	±56	±6	75	SMD
SA0512T-1W	5	4.5~5.5	±12	±42	±5	78	SMD
SA0515T-1W	5	4.5~5.5	±15	±33	±4	78	SMD
SA1205T-1W	12	10.8~13.2	±5	±100	±10	74	SMD
SA1209T-1W	12	10.8~13.2	±9	±56	±6	76	SMD
SA1212T-1W	12	10.8~13.2	±12	±42	±5	79	SMD
SA1215T-1W	12	10.8~13.2	±15	±33	±4	79	SMD
Note: 3.3V input and output models are also available							

Note: 3.3V input and output models are also available.

MODEL SELECTION

SA 05 05 T- 1W

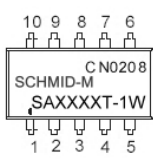


ISOLATION SPECIFICATIONS					
Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

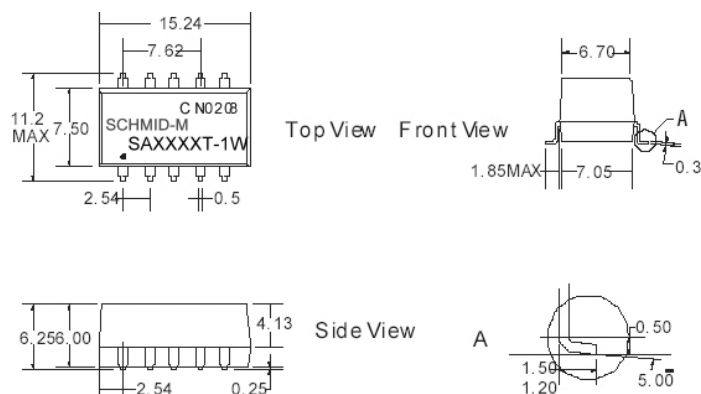
COMMON SPECIFICATIONS	
Short circuit protection	1 second
Temperature rise at full load	25°C MAX, 15°C TYP
Cooling	Free air convection
Operating temperature range	-40°C ~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature	300°C (1.5mm from case for 10 seconds)
Storage humidity range	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	>1,000,000 hours

PIN CONNECTIONS

Pin	Function	Pin	Function
1	GND	6	NC
2	Vin	7	+Vo
3	NC	8	NC
4	0V	9	NC



OUTLINE DIMENSIONS& RECOMMENDED FOOTPRINT DETAILS



Note: All Pins on a 2.54mm pitch; all pin diameters are 0.50mm; all dimensions in mm.

Note:

- 1.All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- 2.See below recommended circuits for more details.



SMD DC/DC Converter – SBT-1W Series

FIXED INPUT ISOLATED& UNREGULATED

1W OUTPUT

SINGLE OUTPUT

ULTRAMINIATURE SMD PACKAGE

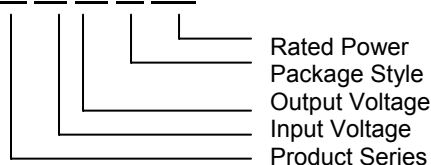
FEATURES

- High Efficiency up to 78%
- Single Voltage Output
- SMD Package Styles
- Industry Standard Pin out
- UL94-V0 Package
- No Heat sink Required
- 1KVDC Isolation
- High Power Density
- Temperature Range: -40°C~+85°C
- No External Component Required
- Low Cost
- Custom Service Available

PRODUCT PROGRAM							
Part Number	Input		Output			Efficiency (%, Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nomin	Range		Max	Min		
SB0505T-1W	5	4.5~5.5	5	200	20	68	SMD
SB0509T-1W	5	4.5~5.5	9	111	23	75	SMD
SB0512T-1W	5	4.5~5.5	12	84	17	77	SMD
SB0515T-1W	5	4.5~5.5	15	67	13	78	SMD
SB1205T-1W	12	10.8~13.2	5	200	20	67	SMD
SB1209T-1W	12	10.8~13.2	9	111	23	73	SMD
SB1212T-1W	12	10.8~13.2	12	84	17	74	SMD
SB1215T-1W	12	10.8~13.2	15	67	13	75	SMD

MODEL SELECTION

SB 05 05 T- 1W



ISOLATION SPECIFICATIONS

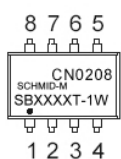
Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

COMMON SPECIFICATIONS

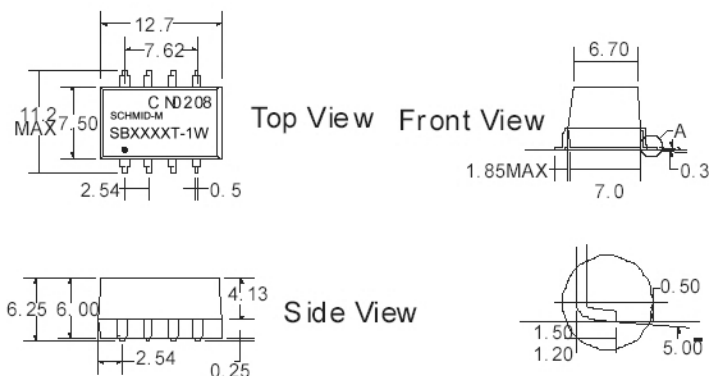
Short circuit protection	1 second
Temperature rise at full load	25°C MAX, 15°C TYP
Cooling	Free air convection
Operating temperature range	-40°C~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature	300°C
Storage humidity range	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	>1,000,000 hours

PIN CONNECTIONS

Pin	Function	Pin	Function
1	GND	5	+Vo
2	Vin	6	NC
3	NC	7	NC
4	0V	8	NC



OUTLINE DIMENSIONS& RECOMMENDED FOOTPRINT DETAILS



Note: All Pins on a 2.54mm pitch; all pin diameters are 0.50mm; all dimensions in mm.

Note:

1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.



SMD DC/DC Converter – SET-1W Series

FIXED INPUT ISOLATED& UNREGULATED

1W OUTPUT

DUAL OUTPUT

ULTRAMINIATURE SMD PACKAGE

FEATURES

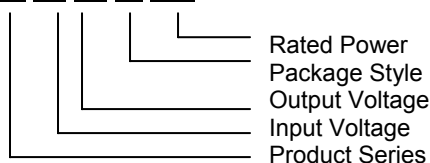
- High Efficiency up to 79%
- Positive& Negative Voltage Output
- Small Footprint
- SMD Package Styles
- Industry Standard Pinout
- UL94-V0 Package
- No Heat sink Required
- 3KVDC Isolation
- High Power Density
- Temperature Range: -40°C ~+85°C
- No External Component Required
- Low Cost
- Custom Service Available

PRODUCT PROGRAM							
Part Number	Input		Output			Efficiency (%, Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nomin	Range		Max	Min		
SE0505T-1W	5	4.5~5.5	±5	±100	±10	72	SMD
SE0509T-1W	5	4.5~5.5	±9	±56	±6	75	SMD
SE0512T-1W	5	4.5~5.5	±12	±42	±5	78	SMD
SE0515T-1W	5	4.5~5.5	±15	±33	±4	78	SMD
SE1205T-1W	12	10.8~13.2	±5	±100	±10	74	SMD
SE1209T-1W	12	10.8~13.2	±9	±56	±6	76	SMD
SE1212T-1W	12	10.8~13.2	±12	±42	±5	79	SMD
SE1215T-1W	12	10.8~13.2	±15	±33	±4	79	SMD
Note: 3 3V input and output models are also available							

Note: 3.3V input and output models are also available.

MODEL SELECTION

SE 05 05 T- 1W



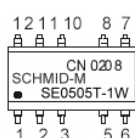
Rated Power
Package Style
Output Voltage
Input Voltage
Product Series

ISOLATION SPECIFICATIONS					
Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

COMMON SPECIFICATIONS	
Short circuit protection	1 second
Temperature rise at full load	25°C MAX, 15°C TYP
Cooling	Free air convection
Operating temperature range	-40°C~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature	300°C (1.5mm from case for 10 seconds)
Storage humidity range	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	>1,000,000 hours

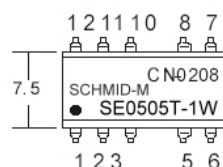
PIN CONNECTIONS

Pin	Function
1	GND
2	Vin
3	NC
5	0V
6	-Vo

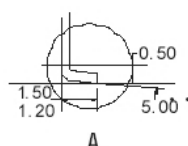


Pin	Function
7	NC
8	+Vo
10	NC
11	NC
12	NC

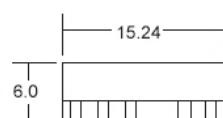
OUTLINE DIMENSIONS& RECOMMENDED FOOTPRINT DETAILS



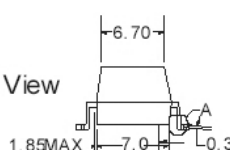
Top View



A



Side View Front View



Note:

1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

Note: All Pins on a 2.54mm pitch; all pin diameters are 0.50mm; all dimensions in mm.



SMD DC/DC Converter – SFT-1W Series

FIXED INPUT ISOLATED& UNREGULATED

1W OUTPUT

SINGLE OUTPUT

ULTRAMINIATURE SMD PACKAGE

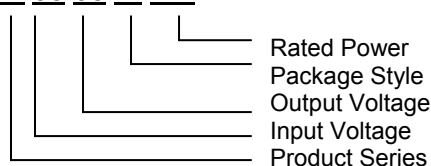
FEATURES

- High Efficiency up to 78%
- Single Voltage Output
- Small Footprint
- SMD Package Styles
- Industry Standard Pinout
- UL94-V0 Package
- No Heat sink Required
- 3KVDC Isolation
- High Power Density
- Temperature Range: -40°C ~+85°C
- No External Component Required
- Low Cost
- Custom Service Available

PRODUCT PROGRAM							
Part Number	Input		Output			Efficiency (%, Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nomin	Range		Max	Min		
SF0505T-1W	5	4.5~5.5	5	200	20	68	SMD
SF0509T-1W	5	4.5~5.5	9	111	23	75	SMD
SF0512T-1W	5	4.5~5.5	12	84	17	77	SMD
SF0515T-1W	5	4.5~5.5	15	67	13	78	SMD
SF1205T-1W	12	10.8~13.2	5	200	20	67	SMD
SF1209T-1W	12	10.8~13.2	9	111	23	73	SMD
SF1212T-1W	12	10.8~13.2	12	84	17	74	SMD
SF1215T-1W	12	10.8~13.2	15	67	13	75	SMD
Note: 3.3V input and output models are also available.							

MODEL SELECTION

SF 05 05 T- 1W

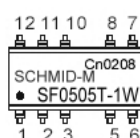


ISOLATION SPECIFICATIONS					
Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

COMMON SPECIFICATIONS	
Short circuit protection	1 second
Temperature rise at full load	25°C MAX, 15°C TYP
Cooling	Free air convection
Operating temperature range	-40°C ~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature	300°C (1.5mm from case for 10 seconds)
Storage humidity range	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	>1,000,000 hours

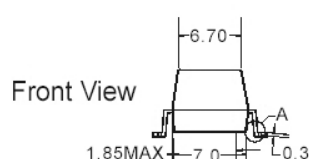
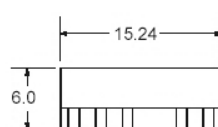
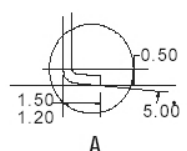
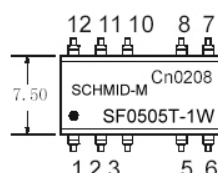
PIN CONNECTIONS

Pin	Function
1	GND
2	Vin
3	NC
5	0V
6	NC



Pin	Function
7	NC
8	+Vo
10	NC
11	NC
12	NC

OUTLINE DIMENSIONS& RECOMMENDED FOOTPRINT DETAILS



Note: All Pins on a 2.54mm pitch; all pin diameters are 0.50mm; all dimensions in mm.

Note:

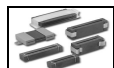
1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

! NEW PRODUCT RANGE !

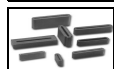
Ferrites for cable assembly



Round cable snap ferrites SMLF



Flat Ferrite with Clip SRPS



Flat Ferrite Cores SRP



Toroidal Cores ST

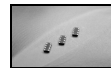


Axial Ferrite Beads SRH

Ferrites for PCB assembly



Chip Bead SCB



Chip Bead Array SCA



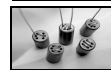
Ferrite Bead SFB



Ferrite Bead SSMB

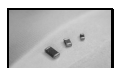


5-Hole Ferrite Bead SR5H

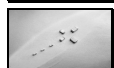


6-Hole Ferrite Bead SR6H

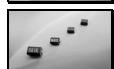
Inductors



SMD Multilayer Chip Inductor SCI



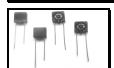
SMD RF Multilayer Chip Inductor SCI-C



SMD Wire Wound Inductor SWI / SWI1008P/ -C/ -L



Leaded Wire Wound Inductor SPK



Leaded Line Filter SQT02



Wire Wound Rodcore Inductor SR



Leaded Common Choke SQT04



SMD Power Inductor STP



SMD Power Inductor SCMD



SMD Power Inductor SSPK



SMD Power Inductor SSPH



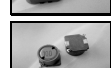
SMD Power Inductor SVLP



SMD Shielded Power Inductor SPRD/ SPRD1004



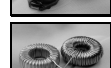
SMD Shielded Power Inductor SPRH



SMD Shielded Power Inductor SSB



SMD Shielded Power Inductor SSPS



Toroidal Line Choke STI

Remark: Please note that these are our standard parts. Other parts are available on request.
 Please send your inquiry to the Sales Partner near you or directly to:

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 F: +49-9403-4251
 Email: info@schmid-m.com

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SCHMID-MULTITECH

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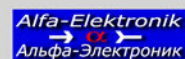
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